



# Biological Assessment

This report is prepared in compliance with Section 7(c) of the Endangered Species Act.

## Santa Rosa County Florida

Financial Project No.'s:  
416748-3-22-01, 416748-3-22-02,  
416748-4-22-01, 416748-4-22-02,  
And 416748-4-22-90  
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## Executive Summary

The Florida Department of Transportation (FDOT) is conducting a PD&E (Project Development and Environmental) study to evaluate potential alignments that would connect State Road (SR) 87S at United States (US) 90 east of Milton to SR 87N north of Milton. This project is needed to provide for a new roadway facility linking SR 87S with SR 87N. The SR 87 Connector will serve as an alternative to the existing shared facility of SR 87 and US 90, which is a constrained facility that is currently operating at a failing level of service (LOS F).

The alternative alignments are located north and east of Milton, in Santa Rosa County, Florida (Figure 1). Alignment 1 is approximately 7 miles long and Alignment 2 is approximately 8 miles long. Each alignment extends from US 90 north, crossing the Blackwater River, and then curves west towards SR 87N. The PD&E phase of the project is expected to be complete by 2013, with design and construction following. The species listed in Table 1 are the federal species evaluated as part of this Biological Assessment. The proposed alignments also traverse Gulf sturgeon critical habitat (Yellow River sub-population) and reticulated flatwoods salamander (RFS) critical habitat (RFS2-Subunit A).

**Table 1. Summary of Effect Determinations for the Proposed Action**

Species	Evolutionarily Significant Unit	Listing Status	Effect Determination
<u>Gulf Sturgeon</u> ( <i>Acipenser oxyrinchus desotoi</i> )	Yellow River sub-population	Threatened (federal), Designated Critical Habitat	May affect, not likely to adversely affect
<u>Reticulated Flatwoods Salamander</u> ( <i>Ambystoma bishopi</i> )	None	Endangered (federal), Designated Critical Habitat	May affect, not likely to adversely affect
<u>Eastern Indigo Snake</u> ( <i>Drymarchon corais couperi</i> )	None	Threatened (federal)	May affect, not likely to adversely affect
<u>Wood Stork</u> ( <i>Mycteria americana</i> )	None	Endangered (federal)	No effect
<u>Red-cockaded Woodpecker</u> ( <i>Picoides borealis</i> )	None	Endangered (federal)	No effect
<u>Freshwater mussels</u>	None	Consideration Encouraged	No effect
<u>Florida Manatee</u> ( <i>Trichechus manatus latirostris</i> )	None	Endangered (federal)	May affect, not likely to adversely affect





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**LIST OF ACRONYMS, ABBREVIATIONS, AND INITIALISMS:**

BA	Biological Assessment
BMP	Best Management Practices
DEMO	District Environmental Management Office
DSL	FDEP Division of State Lands
ERC	Ecological Resource Consultants, Inc.
ESA	Endangered Species Act
ESBAR	Endangered Species Biological Assessment Report
ETDM	Efficient Transportation Decision Making
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FLUCFCS	Florida Land Use Cover and Forms Classification System
FNAI	Florida Natural Area Inventory
FR	<i>Federal Register</i>
FS	Florida Statute
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
LOS	Level of Service
NLAA	Not Likely to Adversely Affect
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWFWMD	Northwest Florida Water Management District
NWI	National Wetlands Inventory
OGT	FDEP Office of Greenways and Trails
OFW	Outstanding Florida Water
PD&E	Project Development and Environment
RCW	Red-Cockaded Woodpecker
RFG	Relative Functional Gain
RFS	Reticulated Flatwoods Salamander
RFS2A	Reticulated Flatwoods Salamander Critical Habitat Unit 2, Subunit A
ROW	Right-of-Way
spp.	Species
SPPP	Stormwater Pollution Prevention Plan
SR	State Road
US	United States
UMAM	Uniform Mitigation Assessment Method
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
WER	Wetland Evaluation Report



## Chapter 1 — Project Overview

### 1.1 Introduction

This Biological Assessment (BA), prepared by the Florida Department of Transportation (FDOT), addresses the proposed action in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. Section 7 of the ESA requires that, through consultation with the United States Fish and Wildlife Service (USFWS), federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat. This BA evaluates the potential effects of the proposed State Road (SR) 87 Connector on species and critical habitat that are federally listed under the ESA. Specific project design elements are identified that avoid or minimize adverse effects of the proposed project on listed species and critical habitat.

Species considered are shown in Table 1.

Table 1. Federally Listed Species Known to Occur or Potentially Occurring in the Alignment Alternative

Species	Evolutionarily Significant Unit	Listing Status	Habitat	Effect Determination
<u>Gulf Sturgeon</u> ( <i>Acipenser oxyrinchus desotoi</i> )	Yellow River sub-population	Threatened (federal), Designated Critical Habitat	Gulf of Mexico and associated estuaries; spawns in coastal rivers with limestone outcrops	May affect, not likely to adversely affect
<u>Reticulated Flatwoods Salamander</u> ( <i>Ambystoma bishopi</i> )	None	Endangered (federal), Designated Critical Habitat	Xeric pine and Mesic Pine Flatwoods / isolated cypress ponds and Basin Swamps	May affect, not likely to adversely affect
<u>Eastern Indigo Snake</u> ( <i>Drymarchon corais couperi</i> )	None	Threatened (federal)	Mesic Flatwoods	May affect, not likely to adversely affect
<u>Wood Stork</u> ( <i>Mycteria americana</i> )	None	Endangered (federal)	Floodplain wetlands and Bottomland Forests	No effect
<u>Red-cockaded Woodpecker</u> ( <i>Picoides borealis</i> )	None	Endangered (federal)	Old growth pine uplands and Sandhills	No effect
<u>Freshwater mussels</u>	None	Consideration Encouraged	Blackwater streams	No effect
<u>Florida Manatee</u> ( <i>Trichechus manatus latirostris</i> )	None	Endangered (federal)	Coastal waters, bays, rivers, and (occasionally) lakes	May affect, not likely to adversely affect

On May 16, 2012, USFWS provided comments by e-mail on the SR 87 project ESBAR and agreed with the determination of “may affect, not likely to adversely affect” the eastern indigo snake (*Drymarchon corais couperi*) and the Florida manatee (*Trichechus manatus latirostris*) since the standard





construction guidelines for both species would be followed. A determination of no effect was made for the Red-cockaded Woodpecker (*Picoides borealis*) and the Wood Stork (*Mycteria americana*) since appropriate habitat was not present within the project area. A determination of no effect was made for freshwater mussels since the Blackwater River and Clear Creek are not listed as critical habitat for any currently listed or proposed mussel species and there are currently no freshwater mussel species listed as threatened or endangered in Santa Rosa County. The May 16, 2012 correspondence is included in Appendix A.

## 1.2 Project Description

### 1.2.1. Purpose and Need

SR 87 is the main north-south roadway in Santa Rosa County. SR 87 facilitates access between Navarre in the south, to Milton and into Alabama. SR 87 is a designated hurricane evacuation route. The existing roadway consists of rural and urban cross-sections, but is generally rural in nature. The existing roadway passes over the Blackwater River through historic downtown Milton where it is a shared facility with United States (US) 90 for 4.6 miles. Currently, this section is operating at a failing level of service (LOS F). The proposed SR 87 Connector will be a two-lane facility with right-of-way for a future four-lane divided facility.

FDOT is conducting a study to evaluate potential alternative alignments that would connect SR 87S at US 90 east of Milton to SR 87N in Milton, or north of Milton. The primary objectives in the extension of SR 87S are to facilitate north/south traffic movement to more effectively serve freight movement and to provide for a more direct hurricane evacuation route from the coast to areas north in Alabama. The extension is also intended to reduce congestion in the City of Milton, and to alleviate travel demand on the section of US 90 currently shared by SR 87.

The primary need for the new corridor is to provide additional capacity, and to improve regional connectivity by providing a more direct route from areas of high growth in northern Santa Rosa County, such as the Berryhill Road area, to I-10 and to areas to the south such as Navarre and the Highway 98 corridor. Access will also be improved to and from I-10 for the Whiting Field US Naval Air Station, and the County's Joint Use Planning Area near Whiting Field. The new roadway facility is also anticipated to provide relief to Ward Basin Road and its intersection with US 90 and much needed relief to the US 90 Blackwater Bridge.

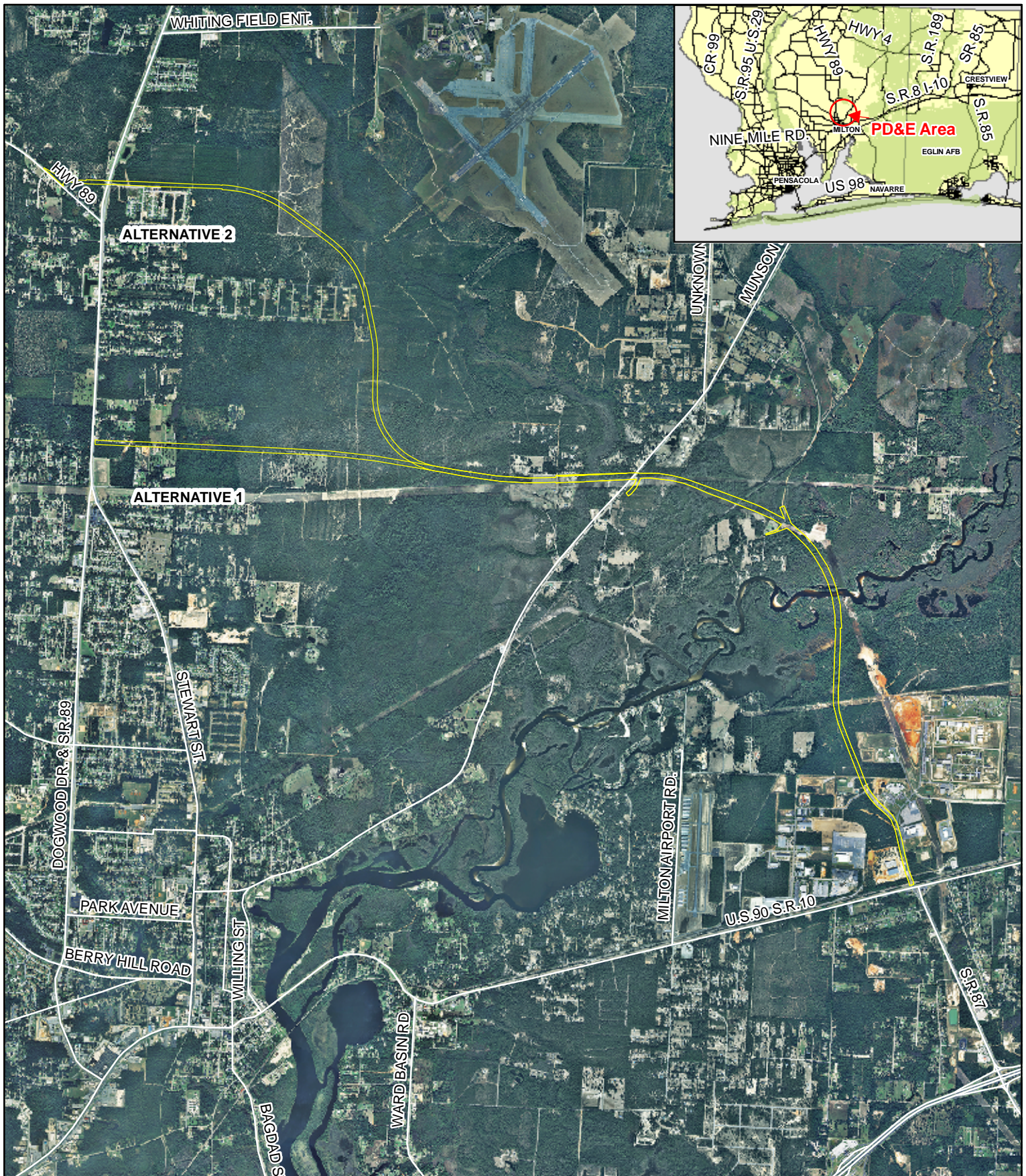
### 1.2.2. Project Location

The alignments are located north of the City of Milton, Santa Rosa County, Florida and south of Whiting Field and cross both the Blackwater River and Clear Creek (Figure 1). Alignment 1 is approximately 7 miles long and Alignment 2 is approximately 8 miles long. Each alignment extends north from US 90, crossing the Blackwater River, and then curves west towards SR 87N.

### 1.2.3. Proposed Action

The proposed action consists of new roadway construction to connect SR 87S to SR 87N. The proposed roadway construction crosses the Blackwater River and Clear Creek, the Blackwater Heritage State Trail, and other uplands and wetlands. The uplands along the corridor are primarily dominated by pine plantations and agriculture. The wetlands are primarily fire suppressed shrub wetlands with smaller





## Legend:

Alignments

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2010 True Color  
Aerial

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Feet

**Figure 1. Location Map: SR 87  
Alternative Alignments  
SR 87 Connector PD&E**





pockets of forested wetlands and floodplains. A bridge is proposed to cross Blackwater River and floodplain, which includes Gulf sturgeon critical habitat, the RFS-2-Subunit A critical habitat unit, and the Blackwater Heritage Trail. A second bridge is proposed over Clear Creek and its floodplain.

The roadway construction involves creation of a new right-of-way (ROW) and will entail surveying and staking, grubbing and clearing, placing fill and leveling/compacting the fill, and paving. Further, there are ancillary structures associated with the new ROW, which include stormwater ponds, utilities, and pedestrian/bike paths. Construction of the ancillary features will entail surveying and staking, grubbing and clearing, excavating, and filling. The proposed construction is divided into an interim phase and a buildout phase. The interim cross section consists of two lanes and is proposed to immediately add capacity. The buildout cross section includes an additional two lanes proposed for future expansion. The bridges over the Blackwater River and Clear Creek will be constructed in phases with the western (southbound) bridge constructed first.

#### 1.2.4. Alternative Alignments

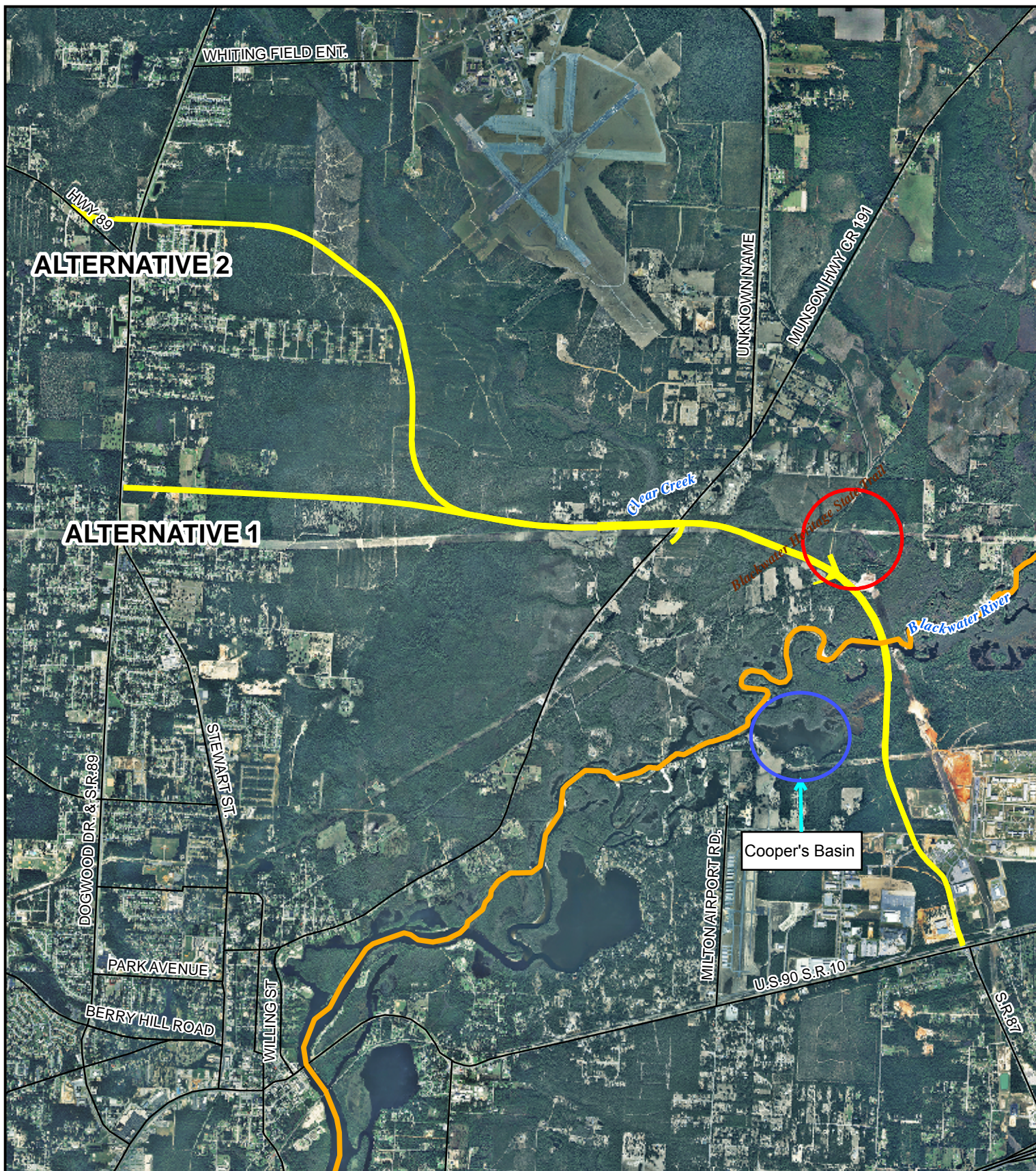
Two alignments have been given consideration, designated Alignment Alternative 1 and Alignment Alternative 2.

Alignment Alternative 1 would extend north from the US 90 and SR 87S intersection, crossing the Blackwater River near the existing power line easement. The roadway would then run adjacent to the power line easement and connect with SR 87N near the southern split of SR 87N and SR 89 within the Manning Lane ROW. This alternative would be approximately seven miles in length. See Figure 1 for the location of Alignment Alternative 1.

Alignment Alternative 2 would extend along the same alignment as Alternative 1 from the US 90 and SR 87S intersection crossing the Blackwater River near the existing power line easement, but would then turn north approximately two miles east of SR 87N, running adjacent to Clear Creek and Whiting Field. The roadway would then turn west to connect with SR 87N near the northern split of SR 87N and SR 89. This alternative would be approximately 8 miles in length. Alternative 2 is located adjacent to the proposed Florida Forever purchase area in the Clear Creek/Whiting Field area. See Figure 1 for the location of Alignment Alternative 2.

The project area contains Designated Critical Habitat for the Gulf Sturgeon and the reticulated flatwoods salamander (Figure 2).






### Legend

- Alignments
- Gulf Sturgeon Critical Habitat\*
- Reticulated Flatwoods Salamander Critical Habitat\*

\* Data obtained from USFWS <[http://criticalhabitat.fws.gov/docs/crithab/crithab\\_all\\_layers.zip](http://criticalhabitat.fws.gov/docs/crithab/crithab_all_layers.zip)>

  
 2010 True Color  
 Aerial

0 0.5 1 2 Miles

## Figure 2. Project Features

### SR 87 PD&E Study

### FDOT



Ecological Resource  
Consultants, Inc.

dv 9.10.12  
ERC #09-143





### 1.3 Action Area

The action area for the SR 87 PD&E project includes all areas that directly or indirectly have an effect on the Gulf sturgeon or the RFS. The project area includes the corridor and the potential stormwater pond sites. The action area was established based on coordination with the USFWS and based on literature related to the effects of noise and vibration of piling installation (Figure 3).

Direct project effects to the Gulf sturgeon include in-channel work that may alter the sturgeons movement within the Blackwater River and turbidity created from pile driving in the Blackwater River. These direct project effects are limited to the in-channel work associated with the proposed Blackwater River Bridge. Indirect effects associated with the bridge construction include noise and vibration disturbances, which may affect the sturgeons' use of the river, and future operation and maintenance of the bridge. Based on communications with USFWS and literature review (Nedwell et. al., 2003; Abbott, 2004), 1,500 feet (457.2 meters) upstream and downstream of the bridge location was determined to be appropriate with regard to potential indirect effects from noise and vibration. The portion of the action area established for the Gulf sturgeon is depicted on Figure 4.

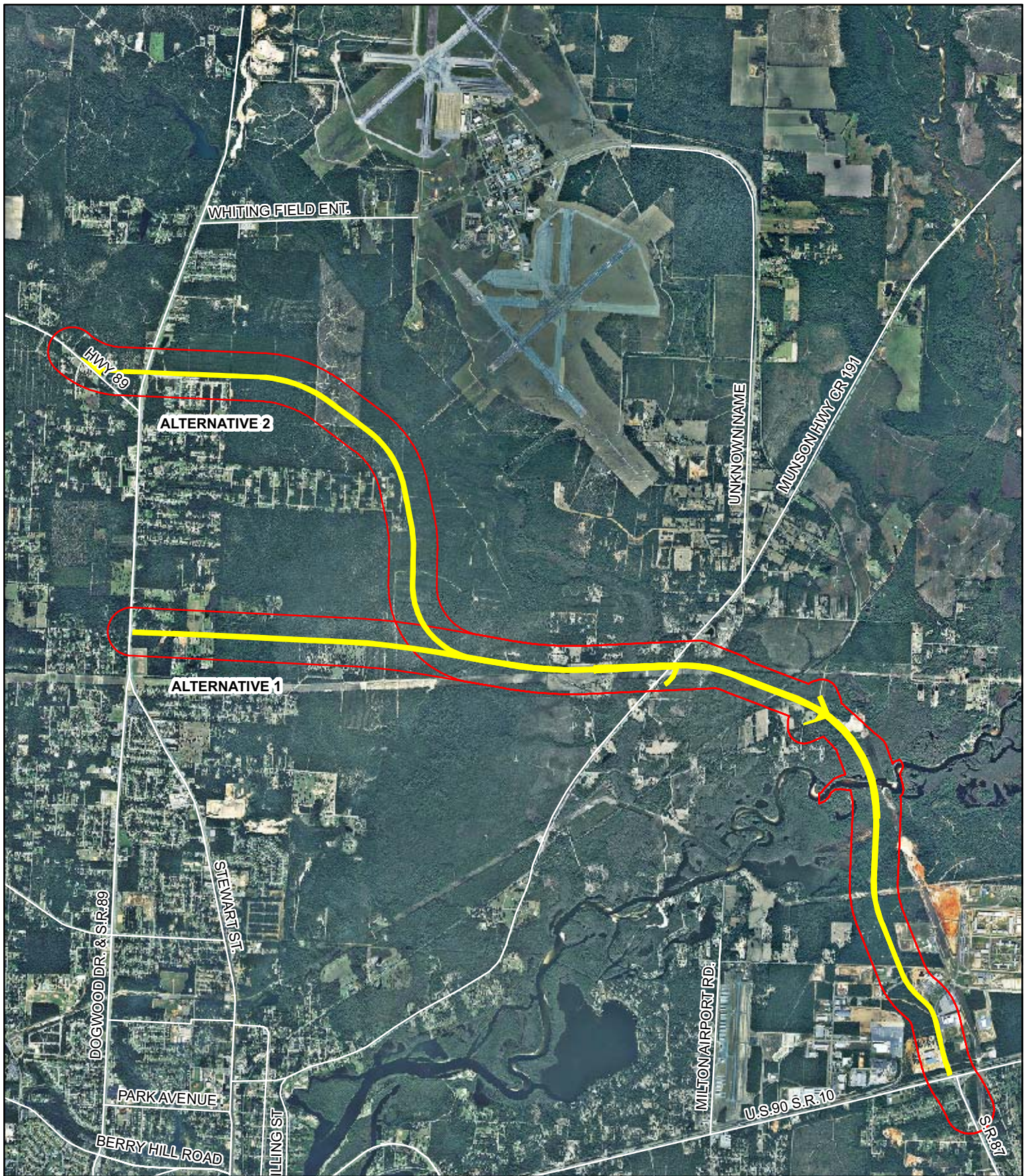
Potential direct impacts to the RFS are related to bridge construction within RFS2A including equipment movement, piling installation, vegetation removal, and site cleanup. Indirect effects associated with bridge construction include increased access to the critical habitat unit for operation, maintenance, and cleaning. A buffer of 1,500 feet from the proposed ROW was established as the action area for the RFS in order to capture any other potential RFS habitat along the length of the proposed ROW. The only appropriate habitats identified during the preliminary analysis of the action area were wetlands located within the RFS critical habitat unit.

### 1.4 Project Area and Setting



The proposed alternative alignments traverse both developed and undeveloped areas. The southern portion of the roadway from the intersection with US 90 north to the Blackwater River floodplain follows an existing road that is surrounded by institutional and commercial development. Currently, there is not a bridge at the Blackwater River crossing location; however, the alignment follows an existing powerline easement that crosses the Blackwater River. The bridge will continue on the north side of the Blackwater River and terminate after crossing the Blackwater Heritage State Trail. After crossing the trail, the proposed alignments continue west through agricultural and silvicultural lands and over Munson Highway to the floodplain of Clear Creek. A bridge will span the Clear Creek floodplain wetlands and open water and terminate in single family residential / agricultural areas. As the road continues west (Alignment 1) and northwest (Alignment 2), it crosses primarily silvicultural lands until the intersection with SR 87 north.

The Future Land Use (Santa Rosa County, 2002) planned for this area is primarily agricultural mixed with industrial, single family residential, and conservation. The industrial future land use is located on the south side of Alignments 1 and 2 at the intersection of SR 87 South and US 90, while the residential land use is located on the northern end of the alignments where they intersect with SR 87 North. The Future Land Use Map is included as Figure 5.





**Legend:**

-  Alignments
-  Action Area

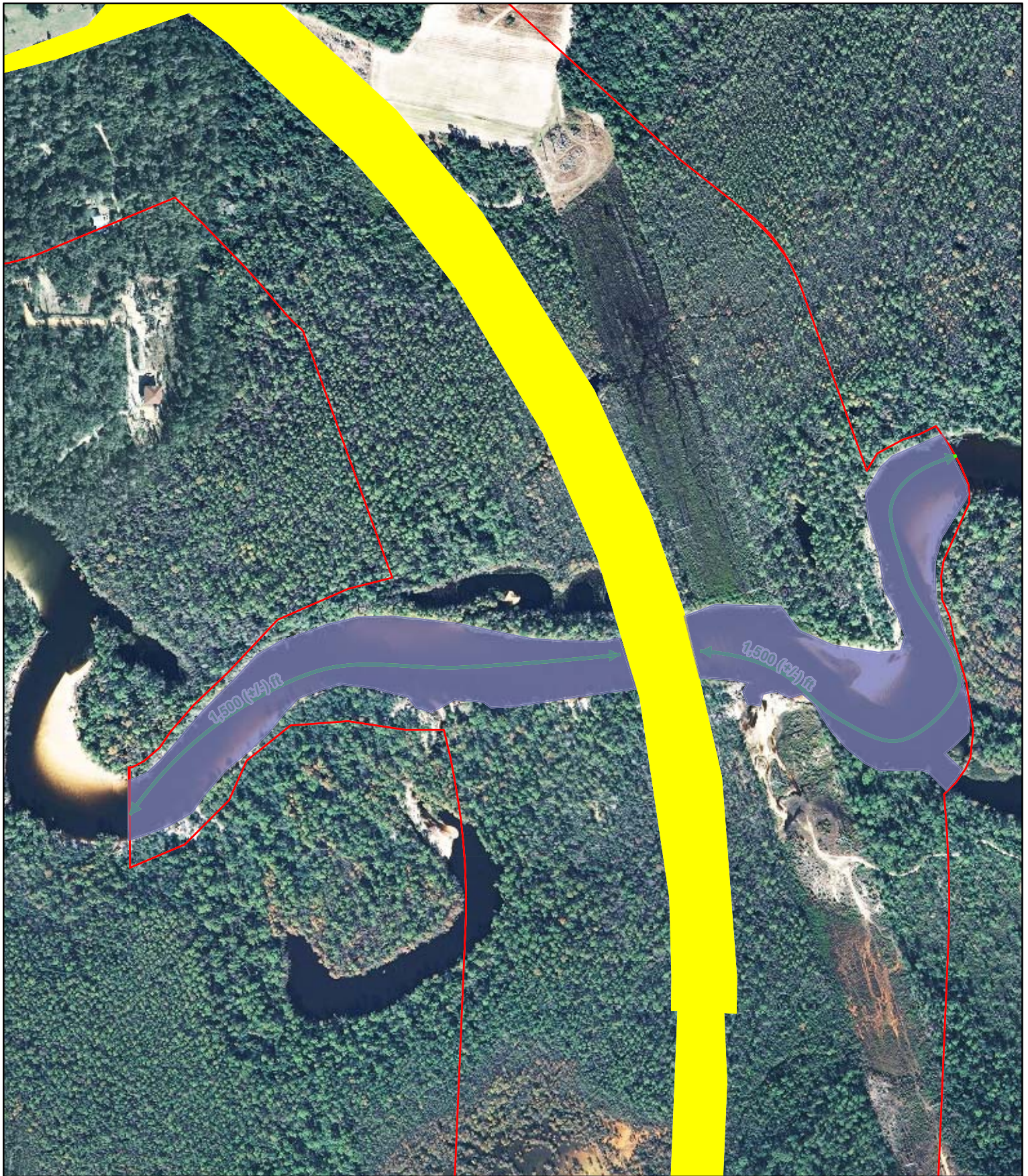
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## Figure 3. Action Area Map

### SR 87 Connector PD&E





**Legend:**

-  Alignments
-  Gulf Sturgeon Action Area
-  Action Area

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Aerial

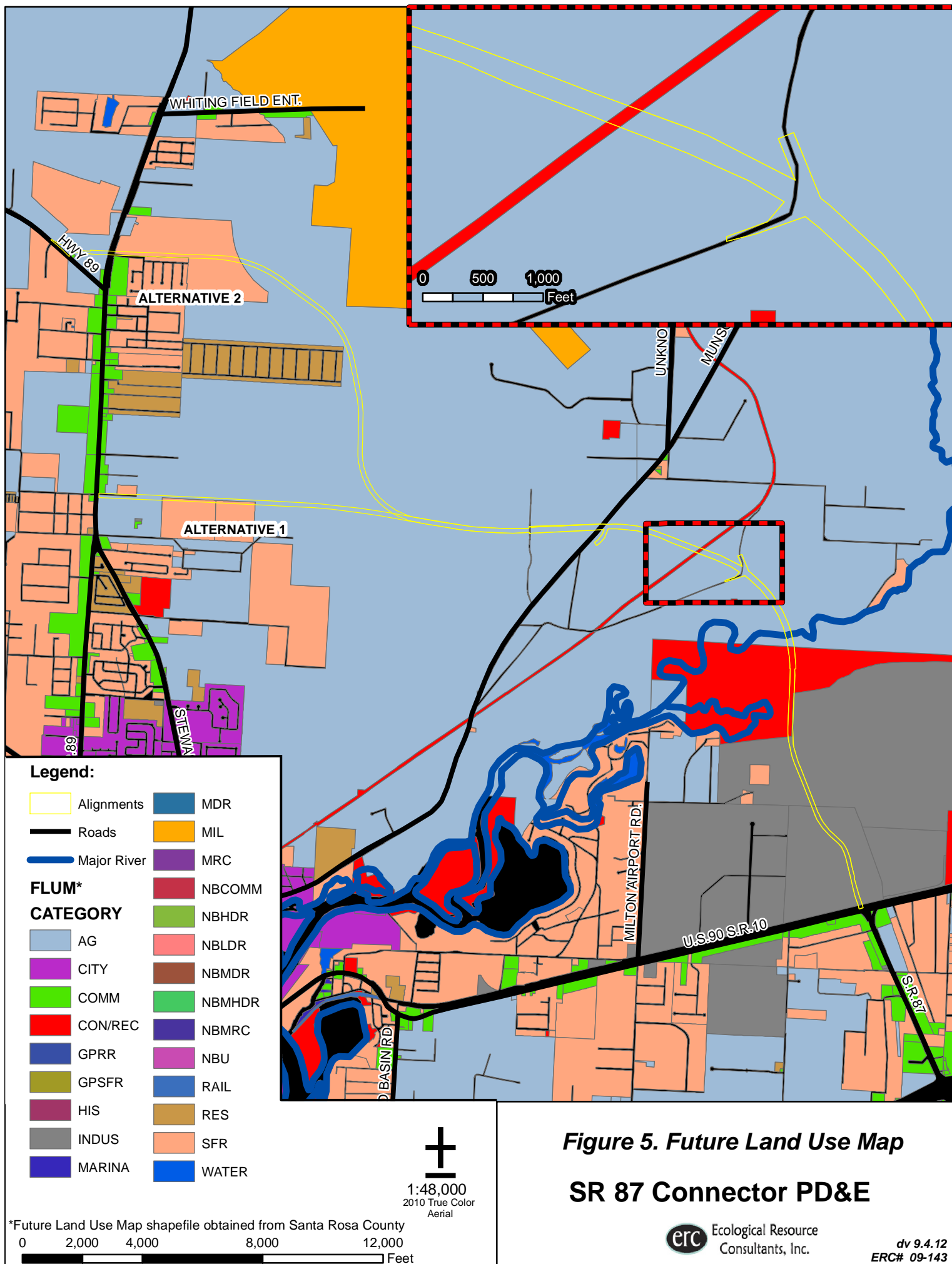
**Figure 4. Gulf Sturgeon  
Action Area**

**SR 87 Connector PD&E**

 Ecological Resource  
Consultants, Inc.

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ERC# 12-159









The existing land use within the alignments was classified using Florida Land Use Cover and Forms Classification System (FLUCFCS). The dominant land covers in both alignments are Upland Coniferous Forest, Hardwood Coniferous-Mixed, Coniferous Plantations, and Wetland Forested Mix. The acreage of existing land cover by FLUCFCS category is summarized in the following tables (Tables 2 and 3) and depicted on Figure 6.

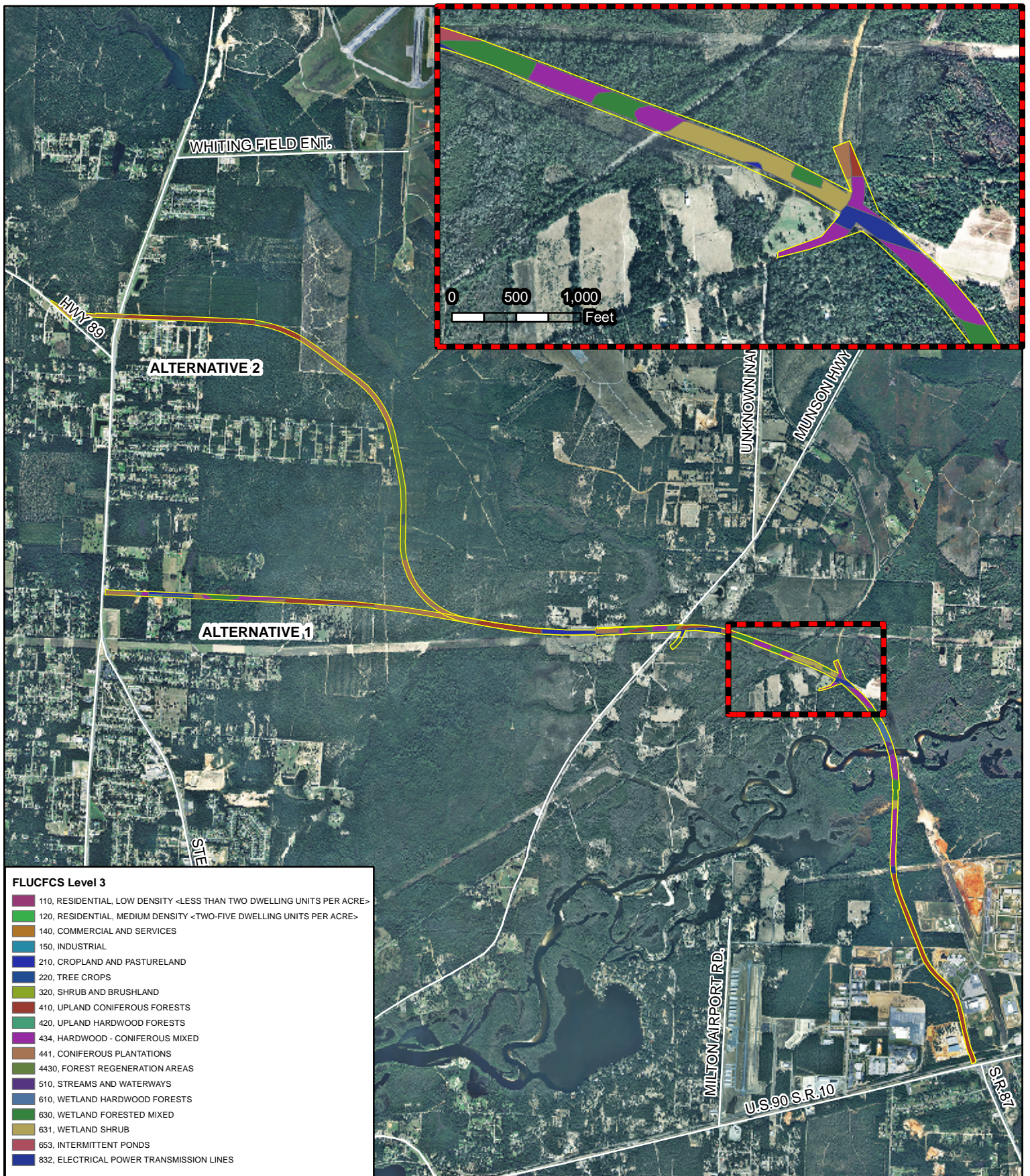
**Table 2. Existing FLUCFCS Land Covers within Alternative 1**

FLUCFCS Code	FLUCFCS Level 3 Descriptor	ACRES
120	RESIDENTIAL, MEDIUM DENSITY <TWO-FIVE DWELLING UNITS PER ACRE>	1.5
140	COMMERCIAL AND SERVICES	10.7
150	INDUSTRIAL	2.7
210	CROPLAND AND PASTURELAND	37.4
220	TREE CROPS	5.9
320	SHRUB AND BRUSHLAND	3.6
410	UPLAND CONIFEROUS FORESTS	217.1
420	UPLAND HARDWOOD FORESTS	3.6
434	HARDWOOD - CONIFEROUS MIXED	109.3
441	CONIFEROUS PLANTATIONS	51.0
510	STREAMS AND WATERWAYS	6.7
610	WETLAND HARDWOOD FORESTS	14.4
630	WETLAND FORESTED MIXED	46.5
653	INTERMITTENT PONDS	4.6
631	WETLAND SHRUB	19.1
832	ELECTRICAL POWER TRANSMISSION LINES	55.8

**Table 3. Existing FLUCFCS Land Covers within Alternative 2**

FLUCFCS Code	FLUCFCS Level 3 Descriptor	ACRES
110	RESIDENTIAL, LOW DENSITY <LESS THAN TWO DWELLING UNITS PER ACRE>	1.4
120	RESIDENTIAL, MEDIUM DENSITY <TWO-FIVE DWELLING UNITS PER ACRE>	1.2
140	COMMERCIAL AND SERVICES	9.7
210	CROPLAND AND PASTURELAND	22.3
410	UPLAND CONIFEROUS FORESTS	251.1
420	UPLAND HARDWOOD FORESTS	3.6
434	HARDWOOD - CONIFEROUS MIXED	88.1
441	CONIFEROUS PLANTATIONS	108.6
443	FOREST REGENERATION AREAS	46.6
510	STREAMS AND WATERWAYS	6.7
610	WETLAND HARDWOOD FORESTS	12.5
630	WETLAND FORESTED MIXED	39.1
653	INTERMITTENT PONDS	4.6
631	WETLAND SHRUB	19.1
832	ELECTRICAL POWER TRANSMISSION LINES	55.8





## Legend:

 Alignments



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2010 True Color  
Aerial

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Feet

**Figure 6. FLUCFCS Map**  
**SR 87 Connector PD&E**





## 1.5 Project/Consultation History

On December 19, 2009, the SR 87 Connector project was submitted for Efficient Transportation Decision Making (ETDM) review as Project #12597 with six corridors. Four corridors were identified as having a Dispute Resolution degree of effect. Corridor 3 was issued a dispute by the Florida Department of Environmental Protection (FDEP) due to preliminary alignment through parcels planned to be purchased as part of the Clear Creek/Whiting Field Florida Forever project, and location within a portion of the Blackwater River Heritage Trail, which FDEP determined constituted a dispute since it would involve the Section 4(f) process. The Project Team and the FDOT Project Manager met with FDEP, the Division of State Lands (DSL), and the Office of Greenways and Trails (OGT) on March 24, 2010 for resolution, however, FDEP declined to remove the dispute. In the summer of 2011, FDEP purchased the Whiting Field tract and Corridor 3 was eliminated from consideration.

The three southern corridors, 4, 5, and 6, were also disputed by the Northwest Florida Water Management District (NFWFMD). The three corridors would have directly impacted Florida Forever Lands located adjacent to and within the Blackwater River that are owned by NFWFMD and were subsequently eliminated from further review. Agency reviews were completed in the spring of 2010. The ETDM Summary Report was completed and published on May 12, 2010. The USFWS and NFWFMD requested further coordination related to wetlands. The USFWS, the Florida Fish and Wildlife Conservation Commission (FWC), and Whiting Field requested further coordination related to wildlife and habitat.

Ecological Resource Consultants (ERC) (Dr. John Tobe, Daniel Van Nostrand, Alani Davis, and Bryan Phillips) met with the USFWS (Mary Mittiga and Harold Mitchell) on November 8, 2011 to evaluate the quality and habitat potential of critical habitat RFS2A and the potential for project related impacts related to alternative alignments 1 and 2. During the field visit, ERC requested that USFWS prepare a summary letter specifying their preferences for avoidance and minimization to any potential impacts within the critical habitat unit.

A follow-up teleconference was conducted on December 8, 2011 with FDOT (Peggy Kelley), USFWS (Mary Mittiga), ERC (Martin Gawronski and Daniel Van Nostrand), and Metric (John Flora). During this teleconference, USFWS recommended that FDOT avoid impacts to reticulated flatwoods salamander (RFS) critical habitat, if possible. A map of the estimated breeding pond areas within the critical habitat unit was prepared by ERC and sent to USFWS on December 9, 2011. On January 17, 2012, ERC received an email response from the USFWS that stated the pond area should consider all wetlands within the reticulated flatwoods salamander critical habitat unit 2, subunit A (RFS2A).

In response to the USFWS concerns regarding habitat and species impact, the alignment through the critical habitat unit RFS2A was shifted to the southwest out of the center of the main pond and parallel to the existing powerline easement, Figure 7. In order to further minimize impacts within the critical habitat unit RFS2A, FDOT contacted the Federal Highway Administration (FHWA) to determine if it was feasible and within project constraints to bridge the RFS2A critical habitat unit. FDOT received approval to propose a bridge as depicted in Figure 8 although it adds a considerable amount of cost to the project construction.



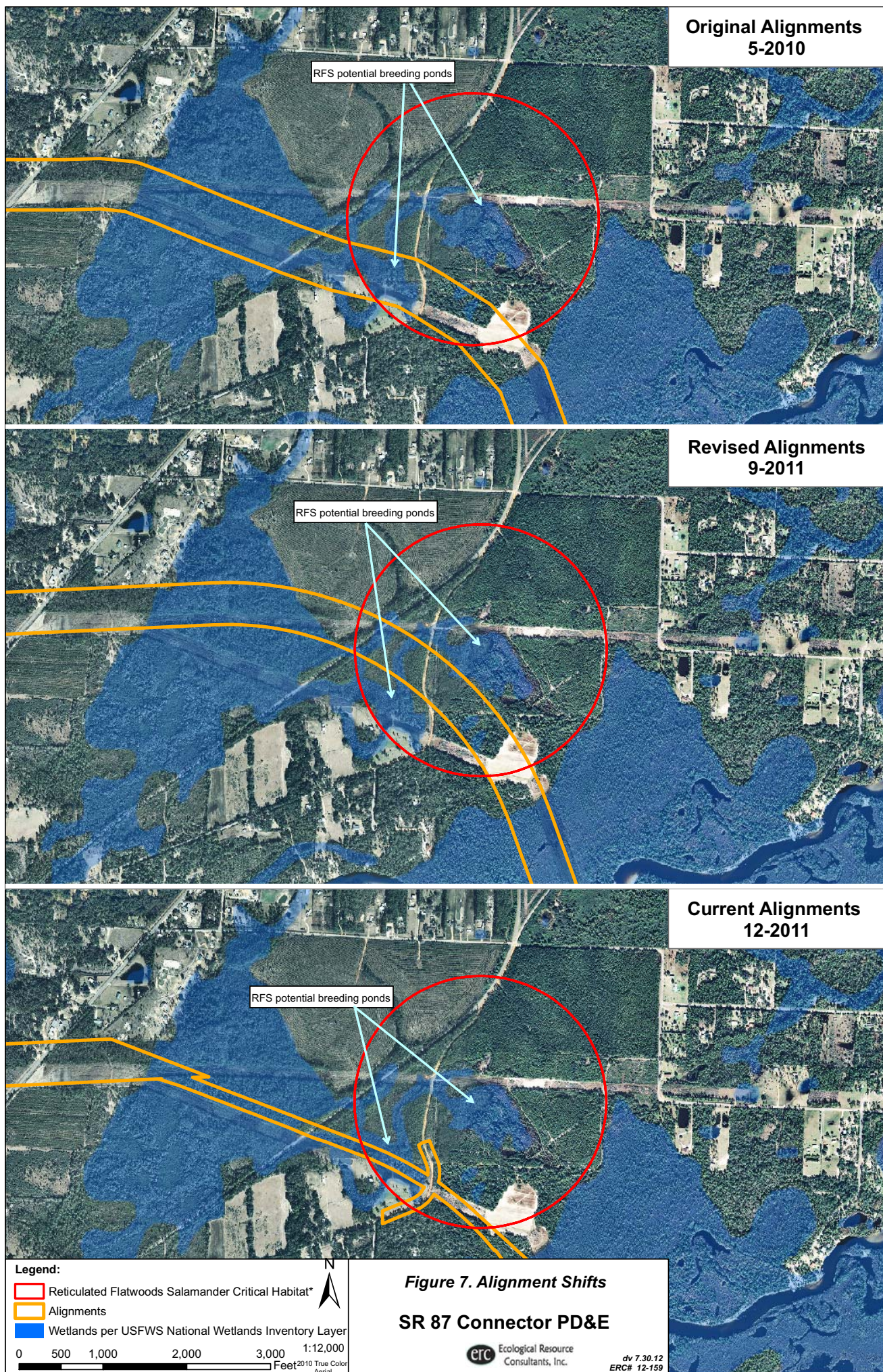
In 2011 and 2012, endangered species surveys and wetland evaluations were completed for the alternative alignments. Reports summarizing the results of these surveys were prepared and submitted to the USFWS for review and comment. The Endangered Species Biological Assessment Report (ESBAR) was finalized in March 2012 (ERC and Metric) and the Wetland Evaluation Report (WER) was finalized in May 2012. The USFWS emailed comments related to the ESBAR on May 15, 2012 (Appendix A – USFWS Correspondence), and agreed with the determinations of effect for all species except the Gulf sturgeon and the RFS.

In order for the USFWS to concur that the proposed action is not likely to adversely affect (NLAA) the Gulf sturgeon, the USFWS recommended several Best Management Practices (BMPs), including the standard Gulf sturgeon guidelines (Appendix B). The recommendations included the extension of the no-work timeframe to March through November and avoiding piling placement in the Blackwater River, if possible. If FDOT and FHWA committed to the recommendations, then USFWS would likely concur with the NLAA determination; however, if not, the USFWS recommended initiating formal consultation. The USFWS stated that formal consultation should be initiated for the RFS as long as any work was proposed within the RFS2A.

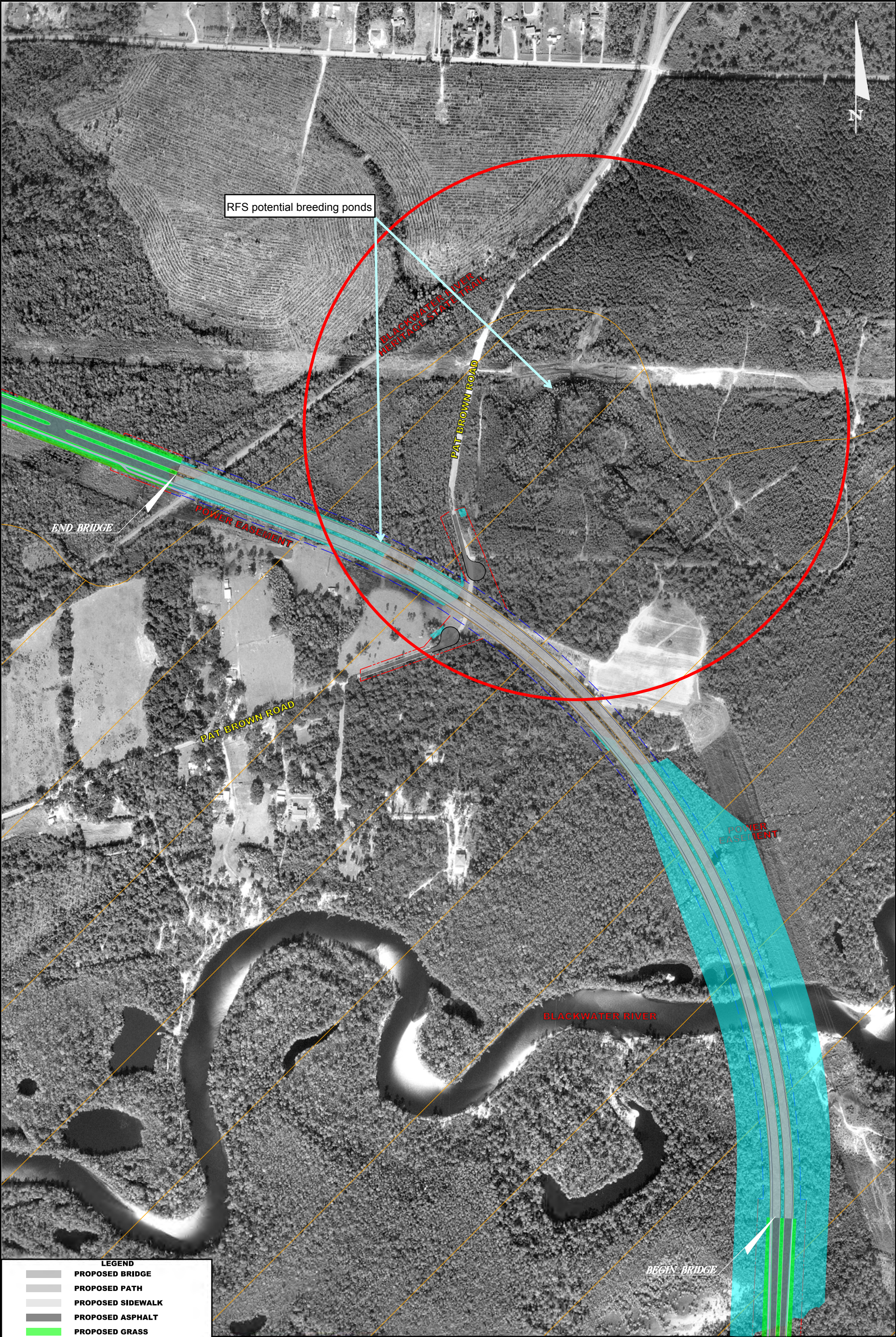
Following USFWS' review of the ESBAR and their comments, ERC conducted a more detailed desktop assessment for the RFS to determine potential habitat within the alternative alignments. The results of the desktop analysis were submitted to USFWS in July 2012 and identified eight pond areas that could serve as potential habitat (Appendix C). After review of the eight pond areas, only two received moderate scores based on the USFWS approved HDR method (See Table 6, Chapter 4). Both ponds that received moderate scores are located within the RFS2A and are addressed in this consultation.

The USFWS reviewed the desktop analysis and sent a follow-up email to FDOT on July 12, 2012. The USFWS agreed with the results of the desktop analysis, but recommended initiating formal consultation for potential impacts to the RFS critical habitat unit. The USFWS also asked if the Gulf sturgeon work restrictions could be extended from March through November to ensure that no fish would be present. In response to the May 16, 2012 and July 12, 2012 emails, the FDOT facilitated a teleconference with the USFWS on August 27, 2012. During the August teleconference, the USFWS recommended that FHWA initiate formal consultation for the potential impacts to RFS2A and for the Gulf sturgeon, unless the FDOT and FHWA were willing to commit to the extended in-channel work restrictions, since the USFWS has indicated they lack information to more narrowly define the timeframe when sturgeon would potentially be present within the project area.









LEGEND

PROPOSED BRIDGE

PROPOSED PATH

PROPOSED SIDEWALK

PROPOSED ASPHALT

PROPOSED GRASS

FLATWOODS SALAMANDER HABITAT

EXISTING RIGHT-OF-WAY

PROPOSED RIGHT-OF-WAY

WETLANDS

FLOODPLAIN



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		0 100 500 Feet
ROAD NO.	COUNTY	
SR 87	SANTA ROSA	

Figure 8.  
FLATWOODS  
SALAMANDER  
CU BRIDGE AREA





## Chapter 2 — Project Details

### 2.1. Construction

The SR 87 Connector will be constructed through several sequential and standard road construction procedures including mobilization, surveying and staking, clearing and grubbing, excavation and embankment, and cleanup and restoration. Relevant construction activities are further discussed below. Project details are based on preliminary designs, which may change slightly during final design.

The main construction activity associated with the Gulf sturgeon critical habitat and the RFS critical habitat is the bridge that commences on the south side of the Blackwater River and terminates on the northwestern side of the Blackwater Heritage State Trail (directly west of the RFS critical habitat unit) (Figure 8). Based on the preliminary design, the proposed bridges would be composed of Florida I-45 Beams, resulting in spans of approximately 103 feet between pile bents. The pile bents would consist of 24" by 24" pre-stressed piles that are located approximately six feet apart. The southbound lanes would be wider (56 feet) and would need nine pilings per pile bent, while the northbound lanes (49 feet) would need eight. A preliminary plan set for the bridge is included in Appendix D.

Two pile bents with 17 pilings would be installed within the Blackwater River. The only "in-channel" construction work associated with the bridge is the piling installation. In-channel work is defined as any work below the ordinary high water line (OHWL) and does not include the use of boats in the river or the placement of any material above the OHWL. Boats or barges would likely be used during construction and work on bridge supports will be conducted over the river, but above the water line. After crossing the river, the bridge extends to the north towards Pat Brown Road and shifts west where it traverses the RFS critical habitat unit. Approximately 38 pile bents would be used to support the bridge within the RFS critical habitat unit, with 17 pilings per bent for a total of 646 pilings.

#### 2.1.1. Project Timeline and Sequencing

Activities	Pre-Construction (5+/- years)	Construction (5-20 years)
General Project Design	✓	
Surveying	✓	
Geotechnical Investigations	✓	
Drainage and Environmental Permitting	✓	
Utility Coordination	✓	
Mobilization		✓
Survey and Staking		✓
Set Up and Maintain Erosion Control Features		✓
Clearing and Grubbing		✓
Roadway and Pond Embankment and Excavation		✓
Drainage		✓
Subgrade / Base / Asphalt		✓
Curbing / Sidewalks		✓
Guardrail / Grading / Grassing		✓
Site Cleanup		✓



### 2.1.2. Site Preparation

#### 2.1.2.1. Set Up and Maintain Erosion Control Features

Once the construction limits and the environmentally sensitive areas have been identified and flagged, erosion control measures will be installed to protect areas outside of the work limits. Erosion control measures include, but are not limited to, silt fencing and/or straw/hay bales around the limits of construction areas, floating turbidity barriers for all in-channel work, and temporary sediment containment ponds. The erosion controls will be inspected per State standards as designated in the Stormwater Pollution Prevention Plan by a State certified stormwater management inspectors. Additional inspection and maintenance will be conducted following rain events to ensure that any necessary maintenance is conducted.

#### 2.1.2.2. Clearing and Grubbing

Clearing and grubbing is necessary to remove trees, roots, and any other structures located in the ROW to allow operation of construction equipment. Trees and shrubs would be cut even with the ground surface, followed by root raking to approximately twelve inches below the surface. Material removed from the construction ROW will be stockpiled at the edge of the ROW or within a designated disposal area (which will only be located in uplands). Large trees, shrubs, and debris will be removed from the soil, hauled away, and disposed of in accordance with local burning regulations and/or disposed of properly. Remaining topsoil will be spread within the finished ROW and will be stabilized using accepted best management practices.

In the location of the bridges, clearing and grubbing will be limited to cutting vegetation to the ground surface. Root raking will only be used in areas where piling cap supports are anticipated, which will minimize impacts to the floodplain wetlands that support the Blackwater River and the RFS critical habitat unit. Replanting the areas beneath the bridge will not be necessary since it is anticipated that the existing seedbank will provide adequate cover and stabilize the soil surfaces.

#### 2.1.2.3. Roadway and Pond Embankment and Excavation

Embankment and excavation will not be necessary within the Gulf sturgeon critical habitat or the RFS critical habitat since both areas will be bridged. Embankment and excavation will be employed within the action area as a component of typical roadway construction procedures. The proposed roadway profiles and a preliminary layout are included in Appendix D. The following station numbers are based on the 2012 preliminary design and are likely to change slightly by the final design stage.

On the south side of the Blackwater River, embankments will be constructed for the bridge approaches near station 198+00. Around stations 183+00 and 195+00, two concrete culverts will be placed beneath the embankment to allow for surface water flow between wetlands on the east and west side of the embankment. The bridge will extend approximately 5,570 feet from near station 198+00 to near station 253+00. The bridge will be constructed using 103 foot spans that are supported with pile caps set atop nine pilings each. After crossing the RFS critical habitat and the Blackwater State Heritage Trail, the bridge will connect to another



embankment near station 253+00. Box culverts will be set around stations 256+00 and 279+00 to allow surface water flow between wetlands in a north to south direction.

Near station 279+00, the roadway will remain at the existing surface elevation. The road will continue at surface elevation crossing Munson Highway and until wetland areas associated with Clear Creek are encountered. At Clear Creek, embankments will be constructed on the east side of the creek approximately from station 287+00 to station 300+62 and on the west side of the creek from station 301+00 to 307+00. Stations 300+00 to 301+00 (approximately) will be spanned by the Clear Creek Bridge. The road will continue at the existing surface elevation starting near station 307+00. Multiple culverts will be installed along the remainder of the alignment according to the proposed profiles and hydraulic needs (Appendix D).

Clean fill will be used to construct the embankments. Clean fill does not contain any muck, vegetation, stumps, roots, brush, rubbish, or reinforced bar. Dewatering may be required during embankment construction. All water will be pumped to upland areas on the edge of the ROW that will be contained with silt fencing. Water will be allowed to percolate through in these upland areas to prevent sediment runoff from entering adjacent wetlands. Once the embankments are completed, they will be compacted and stabilized prior to paving and surfacing operations.

Excavation will be required for the construction of stormwater ponds. All stormwater from the proposed bridges and roadways will be collected and conveyed to stormwater treatment ponds. Stormwater ponds will be located outside of the RFS critical habitat unit. Potential stormwater pond locations were evaluated in the Pond Siting Report (Metric, 2012) and are depicted on the stormwater pond siting exhibits in Appendix E. Excavated material will be stockpiled in designated upland areas that will be enclosed with silt fencing and haybales. The stockpile areas will be inspected regularly and will be kept moist to reduce observed wind-blown particulates (dust).

#### 2.1.2.4. Piling Installation

Pilings will be installed in association with the bridge over the Blackwater River, RFS critical habitat, and Clear Creek. Initially, test pilings will be installed along the length of each bridge. Test pilings will be driven at many locations due to variation in soil conditions, which is important in determining the length of pilings that will be fabricated for the bridge construction. It is estimated that one test piling will be installed in each bent location. The test pilings will be cut and used during construction and will remain in place until the commencement of bridge construction.

Pilings will be installed within the Blackwater River and Gulf sturgeon critical habitat by driving pilings. Approximately 17 pilings will be driven in the river and will support two pile bents, one for each section of the roadway. Pile driving will be accomplished using a shallow draft barge. Construction materials will be transported to the site either along the newly constructed ROW or by river. In order to minimize impacts to Gulf sturgeon that may be utilizing the river at the time of construction, the contractor will “ramp-up” for piling installation by conducting several (up to five) soft hammer blows before commencing the harder hammer blows. The “ramp-up”



will alert fish that construction is commencing and give them time to move away from the construction site.

Approximately 646 pilings (composing 38 pile bents) will be driven within the RFS critical habitat zone. During piling installation, erosion control measures will be installed around the limits of the work area and will be maintained until piling installation in each area is complete. Construction mats will be used within wetland areas to minimize soil disturbances.

The profile view of the southbound piling bents is shown in Figure 9. Figure 10 depicts the profile view of the northbound piling bents.

#### 2.1.2.5. Drainage / Asphalt / Curbing & Sidewalks

Following the site preparation, the contractor will begin to install the drainage structures. Drainage structures will be installed as the base layer prior to paving and will include pipe lines, pipe culverts, underdrains, and inlets. Drainage structures will be installed following the initial project impacts related to clearing, embankment, and excavation. Once the underlying drainage structures are in place, the roadway will be prepped and paved. Once initial paving is complete, the curbing, guardrails, and sidewalks will be constructed. Finally, the graded areas will be grassed/landscaped and stabilized.

#### 2.1.2.6. Site Cleanup

Final cleanup, including any final grading, will take place after the construction activities are complete. Any remaining construction debris will be taken to a disposal facility and temporary work areas will be disassembled and restored to their previous condition.

#### 2.1.3. Construction Access and Staging

The exact construction access staging areas have not yet been chosen. Once the preferred alignment alternative is chosen and the design phase of the project commences, staging areas will be determined. FDOT will ensure that all staging areas are within upland areas and are contained with erosion control measures. Staging areas will be used as temporary construction offices, personnel parking areas, and equipment and material stockpiling areas. Staging areas will likely be located in several locations along the preferred alternative.

The project will be constructed in two phases. The first phase involves construction of a two lane roadway with pedestrian/cycling features, followed by phase 2 construction of two future additional travel lanes. The southbound section will be constructed first.

The proposed construction will be divided into interim (Figures 11 & 12) and buildout (Figures 13 & 14) cross sections. The interim cross section is two lanes and is proposed to immediately add capacity and the buildout cross section is an additional two lanes proposed for future expansion. The bridges over the Blackwater River and Clear Creek will be constructed in phases with the western bridge constructed first. Full buildout cross sections are depicted in Figures 15 and 16.



Figure 9. Profile View of Southbound Section Pile Bents

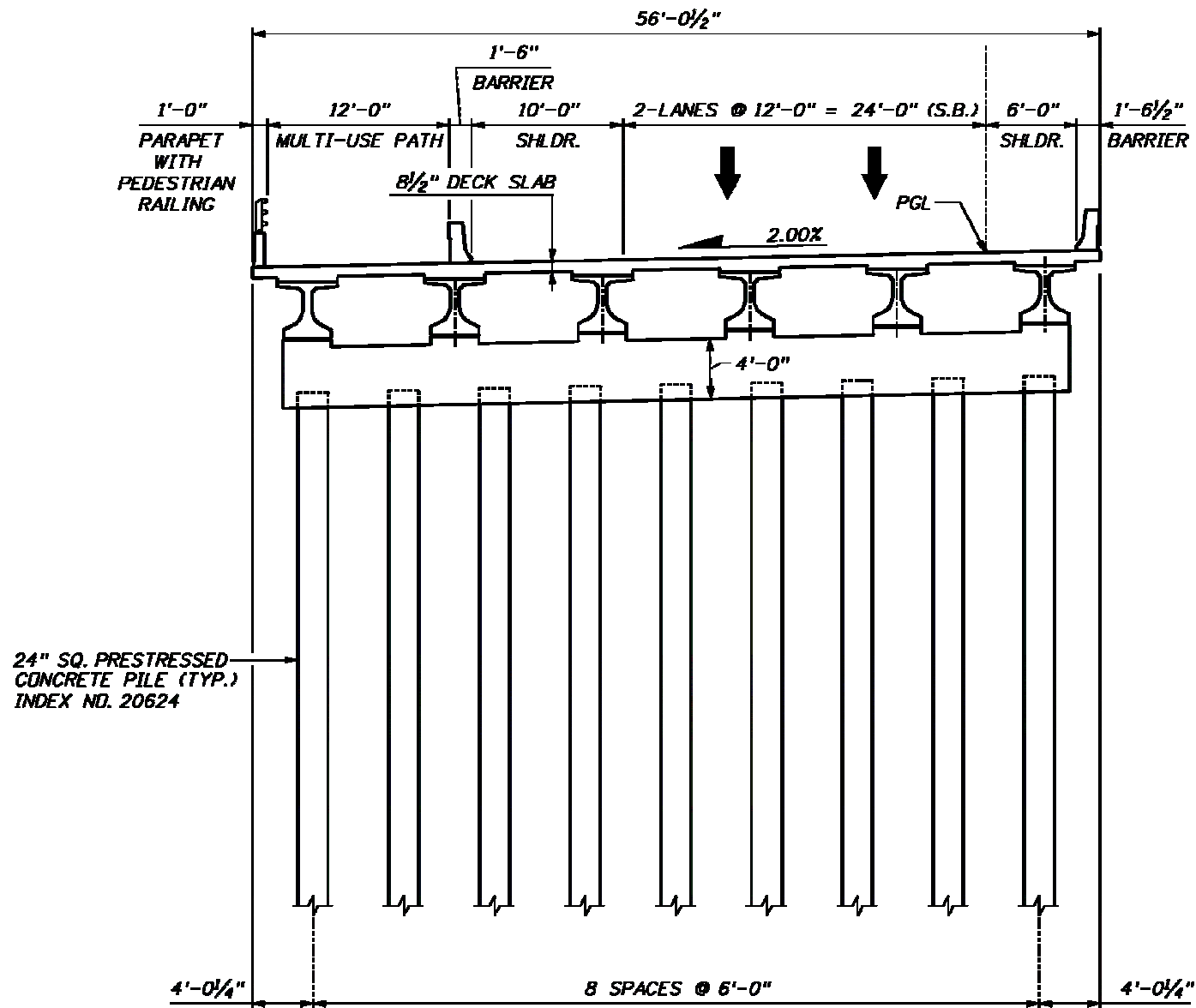




Figure 10. Profile View of Northbound Section Pile Bents

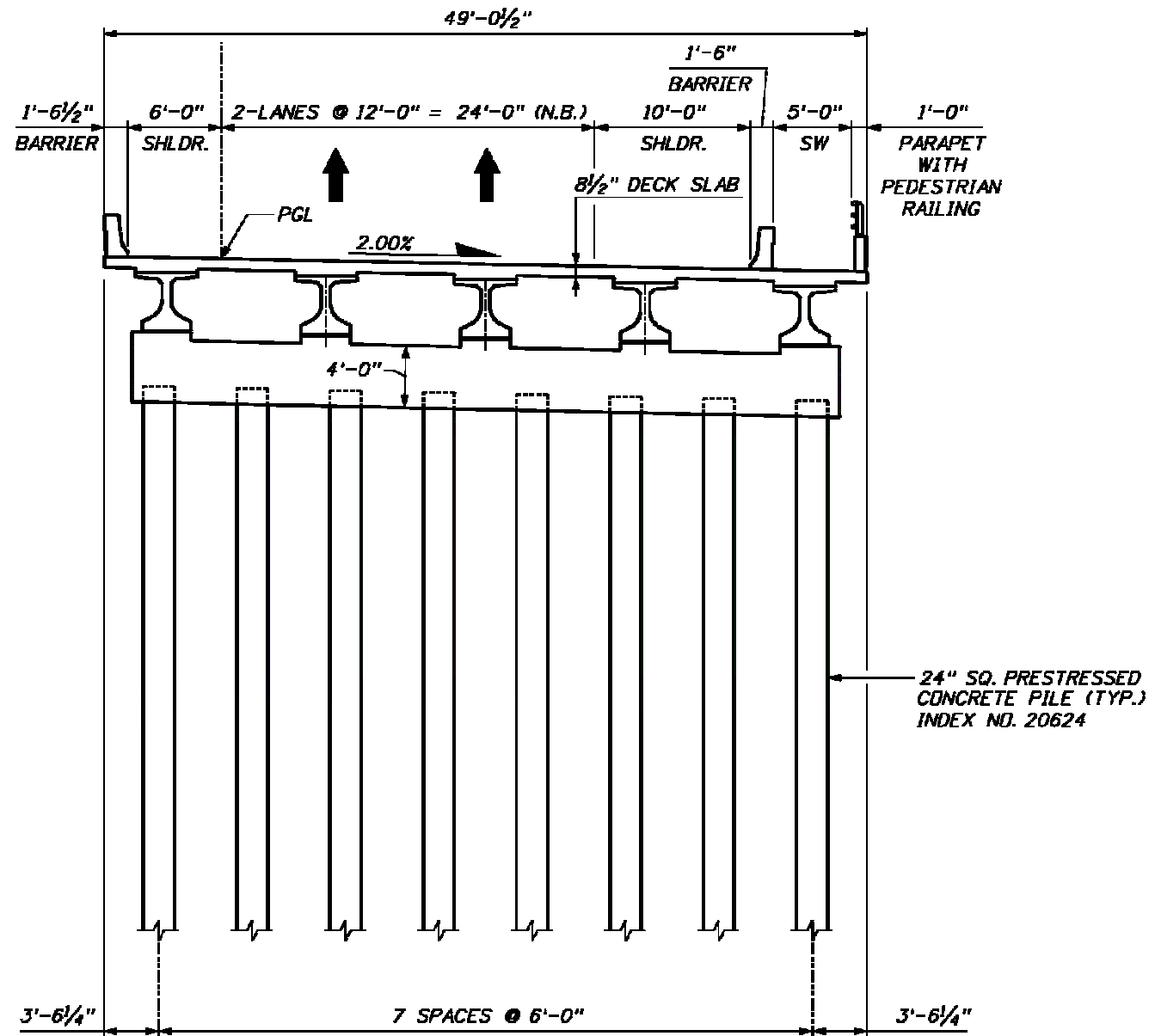




Figure 11. Interim Rural Cross Section

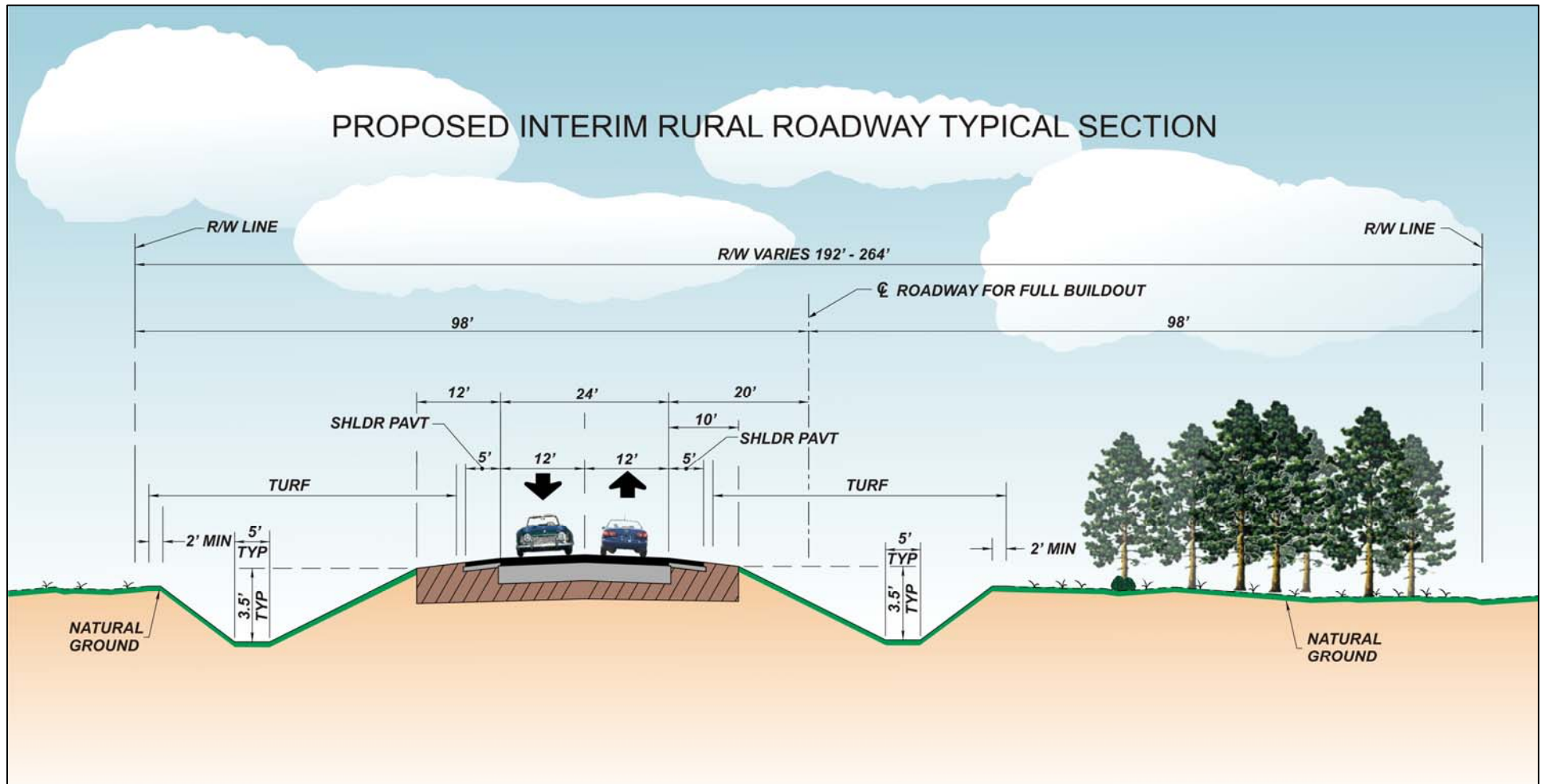




Figure 12. Interim Urban Cross Section

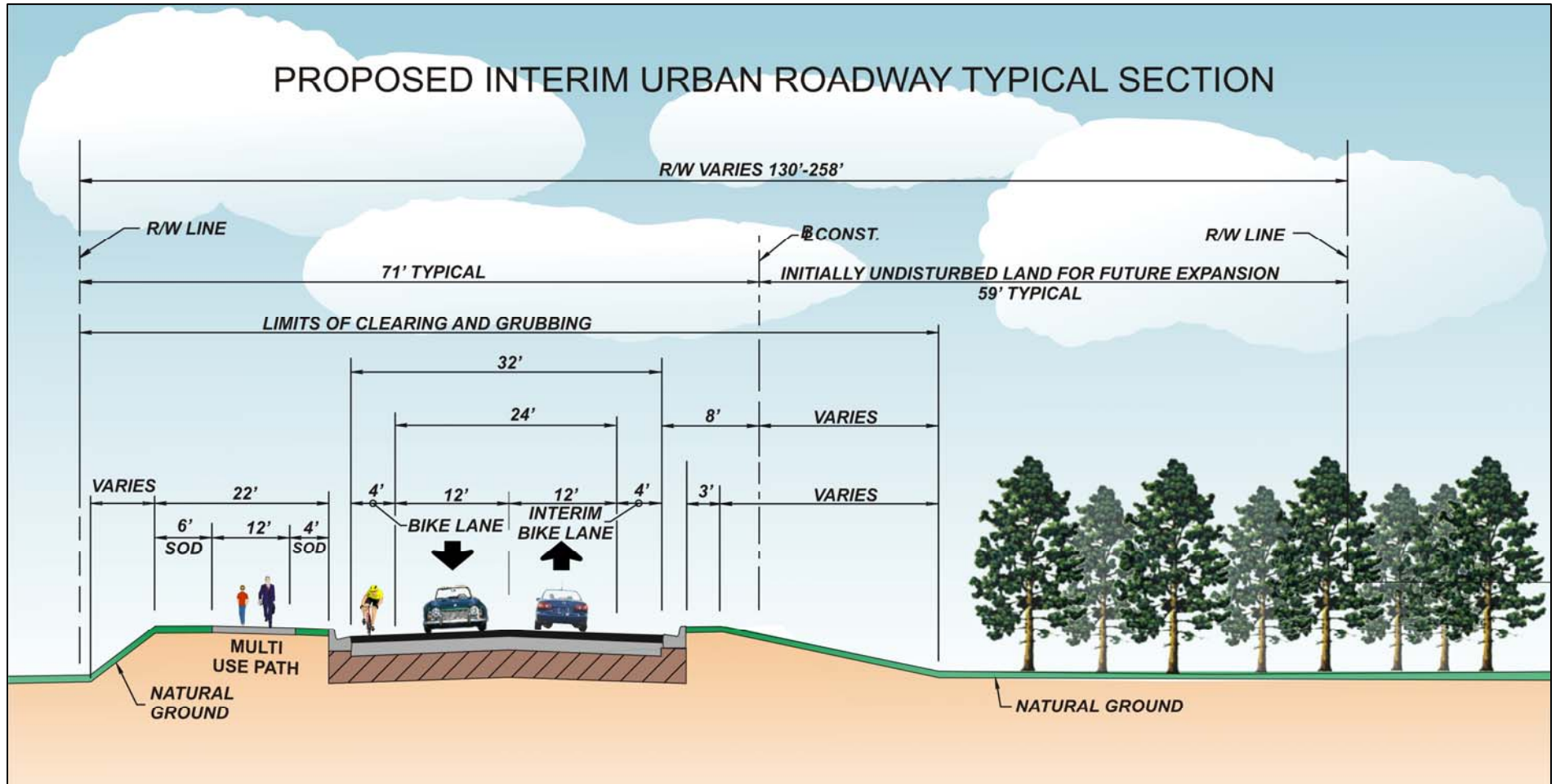












Figure 15. Blackwater River Bridge Cross Section

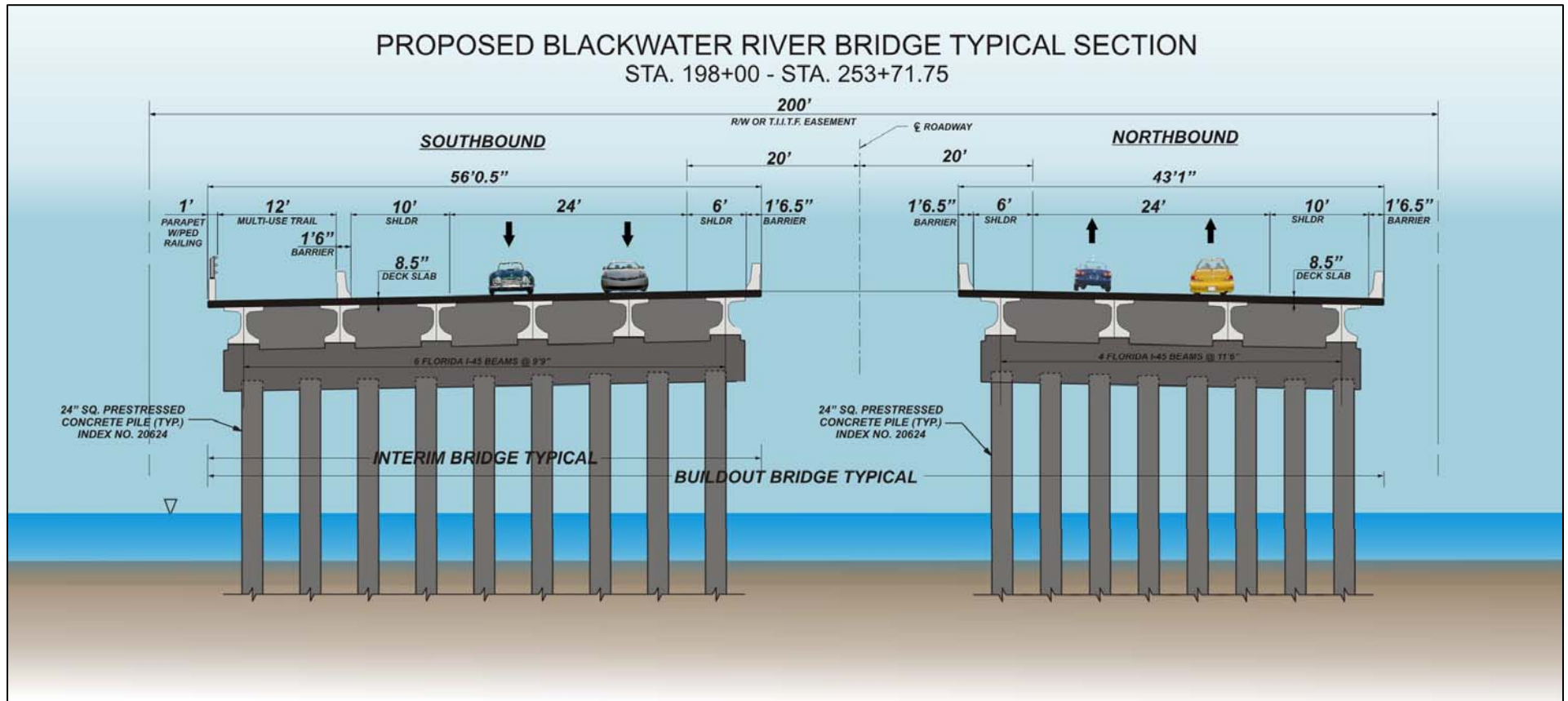
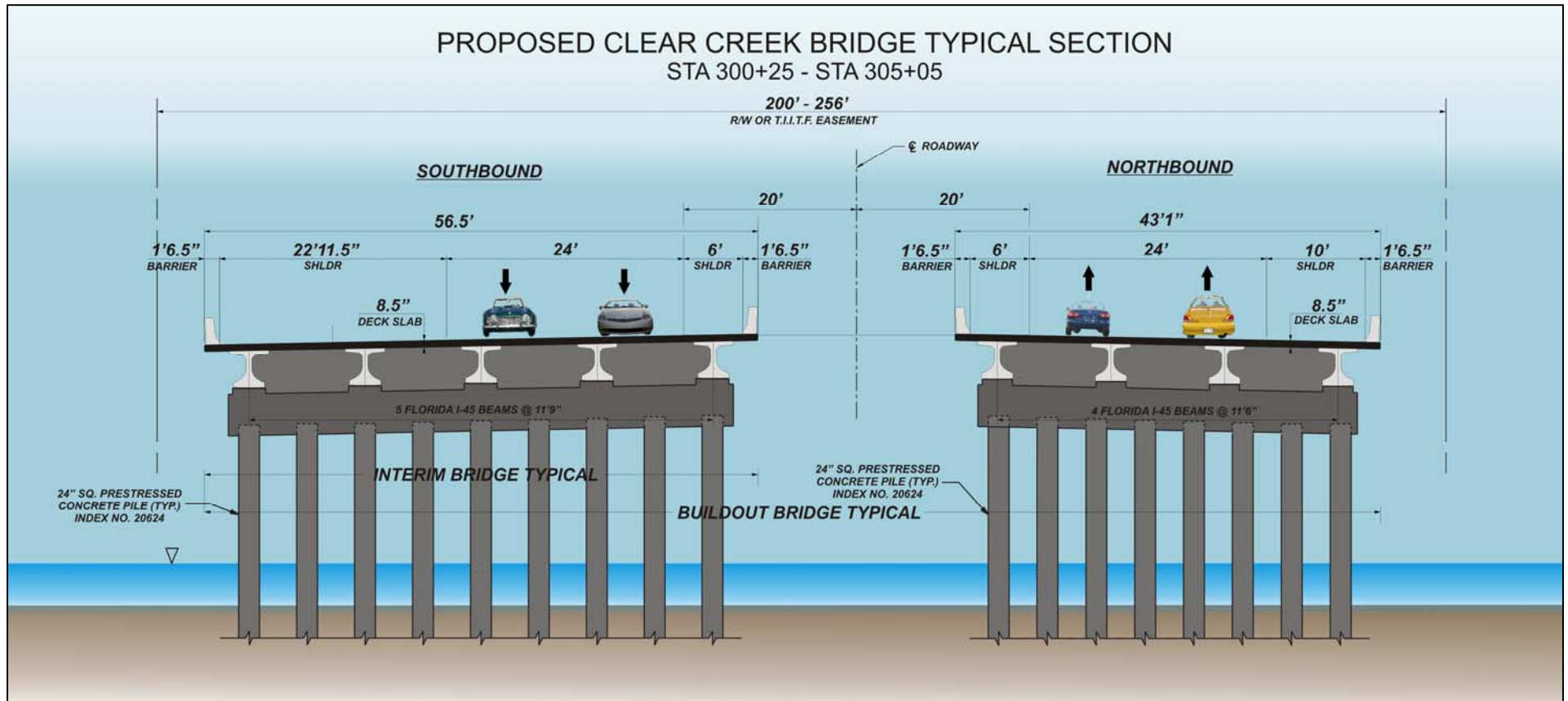




Figure 16. Clear Creek Bridge Cross Section





#### 2.1.4. In-Channel Work

The Blackwater River is an OFW, which requires specific BMPs during construction and stormwater design to prevent degradation to the river. Construction staging areas will be located outside the floodplain. In-channel work will be associated with the bridge supports in the Blackwater River. The USFWS considers in-water work to be any work below the surface of the water. Work on structures above the water line, such as bridge spans and columns, is not considered in-water work. Pilings will be installed within the Blackwater River by driving pilings. Approximately 17 pilings will be driven in the river, nine for the southbound section and eight for the northbound section. Pile driving will be accomplished using a shallow draft barge. Construction materials will be transported to the site either along the newly constructed ROW or by river.

The work area will be separated from the adjacent open water using floating turbidity barriers. The barriers will be installed around the limits of the work area and downstream of the work site, prior to commencing work and no more than 24 hours after work is completed. The barriers located downstream of the worksite will be removed at the end of each work day and replaced prior to commencing work the following day or not before turbidity returns to background levels. Dewatering should not be necessary.

#### 2.1.5. Best Management Practices

During any phase of construction, best management practices will be used to minimize potential impacts to water quality. During clearing, grubbing, embankment, and excavation all environmentally sensitive areas outside the limits of ROW construction will be protected with silt fencing and hay bales. During in-channel work (piling installation), floating turbidity barriers will be used to contain sediment and will only be removed after any turbidity returns to background levels. Details of the sediment and erosion control procedures will be specified in the Stormwater Pollution Prevention Plan (SPPP), National Pollution Discharge Elimination System (NPDES) permit, and the Environmental Resource Permit (ERP). The use of mats will minimize rutting within wetlands and help maintain existing microtopography and water levels. Erosion control BMPs will be used around the limits of each work area and the work areas will be cleaned when construction is complete.

Stormwater from the entire roadway, including both bridges, will be collected in stormwater retention ponds. Ponds with discharges into wetland areas associated with the Blackwater River will treat water to Outstanding Florida Water (OFW) standards and the remainder of the ponds will meet the state requirements under the ERP program. Stormwater permits will be obtained prior to the start of construction. Construction materials will be stockpiled outside of wetland areas and mats will be used for any work within wetlands.

Permits will also be obtained from the FDEP and US Army Corps of Engineers (USACE) for any wetland impacts and for any work in, on, or over waters and wetlands. The FDEP ERP permit constitutes a Water Quality Certification under Section 402 of the Clean Water Act (CWA). The USACE cannot issue a permit until the Water Quality Certification is approved by the FDEP. Wetland impacts will be minimized to the maximum extent practicable in order to maintain overall water quality in the receiving water bodies. Any unavoidable impacts will be mitigated.



Wetland mitigation located in proximity to the project site will ensure that water resources in the general watershed are protected.

## **2.2. Maintenance**

Standard roadway and bridge maintenance will be necessary for the life of the roadway. Maintenance activities for the bridge over the critical habitats include cleaning the superstructure, repainting, roadway resurfacing, repairing joints, and repairing embankment damage and erosion. Precautions will be taken during preventative maintenance tasks such as painting and cleaning to protect the Blackwater River and the RFS critical habitat. Preventative measures may include conducting work from a maintenance traveler, platform, or over a suspended net or tarp to capture rust, paint, and paint removing agents and prevent discharge into the water or wetlands below the bridge. If sanding is necessary, sanders with vacuum filter bags will be used. The water used for cleanup will be collected and disposed of to avoid impacts to the water or wetland below the bridge.





## Chapter 3 — Federally Listed Species and Designated Critical Habitat

Data from several sources were obtained, followed by field investigations by ERC in September and October of 2011 and January of 2012 to establish wetland lines, identify threatened and endangered species and habitat, and to identify and consider any additional environmental issues. Pedestrian transects within the alignment alternatives were used to locate federal plant species proposed for listing, habitats of listed federal plant and animal species, and state listed plant and animal species. Two federally-listed animal species are known to or have the potential to occur within the alternative alignment areas as listed in Table 4. The project alternatives traverse critical habitat of the Gulf sturgeon and the RFS. Habitats within the alignment alternatives were classified using National Wetland Inventory wetlands (NWI) (USFWS, 2010) and Florida Natural Area Inventory (FNAI) (2009) in order to identify species habitat requirements.

**Table 4. Federally Listed Species Potentially Occurring in the Alignment Alternatives**

Species	Evolutionarily Significant Unit	Listing Status	Habitat
<u>Gulf Sturgeon</u> ( <i>Acipenser oxyrinchus desotoi</i> )	<i>Yellow River sub-population</i>	<i>Threatened (federal), Designated Critical Habitat</i>	<i>Gulf of Mexico and associated estuaries; spawns in coastal rivers with limestone outcrops</i>
<u>Reticulated Flatwoods Salamander</u> ( <i>Ambystoma bishopi</i> )	<i>None</i>	<i>Endangered (federal), Designated Critical Habitat</i>	<i>Xeric pine and Mesic Pine Flatwoods / isolated cypress ponds and Basin Swamps</i>

### 3.1. Federally Listed Species

#### 3.1.1. Gulf Sturgeon

The Gulf sturgeon is federally and state listed as a threatened species. The Gulf sturgeon is a subspecies of the Atlantic sturgeon (*A. oxyrinchus*), which can be found along the Florida coast. The Gulf sturgeon is an anadromous species (migrates upriver from the sea to spawn in freshwater) and populates both freshwater and marine environments. The Gulf sturgeon is a slow-maturing fish, with females requiring 8 to 12 years to reach sexual maturity, while males take 7 to 10 years. Most adult feeding occurs along the Gulf of Mexico and its estuaries. Being a bottom-feeding species, they primarily eat invertebrates, including brachiopods, insect larvae, mollusks, worms, and crustaceans. As part of the sturgeon lifecycle, the species is known to acclimate to fluctuating salinity levels through osmoregulation as early as age one. The Blackwater River is designated as Gulf sturgeon critical habitat by the USFWS. Additional discussion of the project as it relates to the sturgeon, including critical habitat, is found below (Section 3.2.1).

#### 3.1.2. Reticulated Flatwoods Salamander

The RFS is one of the smaller mole salamanders and is federally and state listed as an endangered species. The RFS is a fossorial (burrowing) species that breeds within ephemeral wetlands in the fall.



After the eggs are laid, the wetlands must flood within 2-3 days otherwise the eggs will desiccate. By March or April the adult RFS leave the breeding ponds, but are hard to locate since they are fossorial. Adult salamanders are nocturnal and carnivorous, opportunistic feeders, eating primarily earthworms and arthropods. The RFS requires fire-maintained, mesic pine uplands containing wiregrass and longleaf pine and isolated, depressional wetlands that flood in the fall. The RFS2A critical habitat unit is traversed by both Alignments 1 and 2. Additional discussion of the project as it relates to the RFS critical habitat can be found below in Section 3.2.2.

### 3.2. Designated Critical Habitat

The ESA (16 United States Code (U.S.C.) 1531 et seq) requires the Services (USFWS and National Marine Fisheries Service (NMFS)) to identify areas that are essential to the conservation of a species that is proposed for federal listing, when the important characteristics can be determined. The intent of critical habitat is the protection of the essential physical and biological features of the landscape in an appropriate spatial arrangement and quantity that is needed for a species to survive and reproduce. Critical habitat does not affect private landowner actions but does affect Federal agency actions, authorizations, and funded projects. Under the ESA, Federal agencies must protect the characteristics of the designated areas and avoid destruction or adverse modification.

Designated critical habitat is defined as a specific area within the geographic area occupied by a federally listed species at the time it is listed. Critical habitat contains physical and biological features that are considered essential to the conservation of the species and require special management considerations for protection. Designated critical habitat can also include specific areas outside the geographic area occupied by a species at the time of federal listing if the area is determined to be essential to the conservation of the species.

The characteristics that comprise the physical and biological features are also called constituent elements and must be defined in order to designate the habitat. Primary constituent elements consist of: (1) space for individual and population growth and for normal behavior, (2) food, water, air, light, minerals, and other nutritional and physiological needs, (3) cover and/or shelter, (4) sites for breeding, reproduction, germination, seed dispersal, and/or development of offspring, and (5) habitat that is representative of the historic geographic and ecological distribution of a species and/or protected from disturbance.

#### 3.2.1. Gulf Sturgeon

Designated critical habitat for the Gulf sturgeon is located in the SR 87 Connector alignment area. The primary constituent elements for Gulf sturgeon consist of: abundant food items, riverine spawning sites, riverine aggregation areas, flow regime, water quality, sediment quality, and appropriate migratory pathways (USFWS 2003).

**Abundant food/prey items** vary with life cycle stage, but include detritus, aquatic insects, worms, and mollusks within riverine habitat for larval and juvenile stages; amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and crustaceans within estuarine and marine habitat for subadult and adult stages. Gulf sturgeon do not forage during the summer months spent in freshwater but are thought to immediately begin to forage upon returning to estuarine or marine habitat (USFWS 2003).





**Riverine spawning sites** contain substrates that are suitable for egg deposition and development, including limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay.

**Riverine aggregation areas** are staging or resting areas located in holes below normal river depth that are used by juvenile, subadult, and/or adult life stages to minimize energy expenditures while in freshwater. This resting behavior is thought to assist with osmoregulation. The resting behavior probably has a relationship to the lack of foraging while in freshwater.

**Flow regime** is the magnitude, frequency, duration, seasonality, and change rate of freshwater discharge over time and is needed for normal behavior, growth, and survival of all life stages in the riverine environment. This constituent element includes migration, breeding sites, courtship, egg fertilization, resting, and staging. Flow regime also includes maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging. Gulf sturgeon can be affected by flow rates that are too high, since it is thought that they have difficulty with continually swimming against currents above 1 – 2 meters per second (USFWS 2003).

**Water quality** includes temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages (USFWS 2003). Gulf sturgeon are anadromous, spending the winter months in marine habitat and migrating to freshwater habitats during the summer months to spawn, and therefore require a wide range of diverse habitat with varying chemical characteristics. Adults and subadults begin the migration into freshwater when river temperatures increase to a range of 16 – 23°C. Larvae survive best within a range of 15 – 20°C, with low survival over 25°C. In resting areas such as Cooper's Basin, temperatures can range from 15 - 34°C with dissolved oxygen rates ranging from 5.6 – 9.1 mg/L. Dissolved oxygen levels below 3.0 mg/L would probably result in hypoxia, and below 2.0 mg/L would probably result in mortality (USFWS 2003).

**Sediment quality** includes texture and other chemical characteristics that are necessary for normal behavior, growth, and viability of all life stages (USFWS 2003). Gulf sturgeon require bedrock and clean gravel or cobble substrate, which allows adherence of eggs and also provides shelter for developing larvae (USFWS 2003). Freshwater resting areas are composed of limestone and sand, gravel and sand, or just sand (USFWS 2003).

**Appropriate migratory pathways** consist of safe and unobstructed pathways needed for migration within and between riverine, estuarine, and marine habitat.

The Blackwater River, within the alignment area, is designated critical habitat for Gulf sturgeon. This portion of the Blackwater River is part of critical habitat unit 4, which consists of the Yellow River system in Santa Rosa and Okaloosa Counties, Florida and Covington County, Alabama. The Blackwater River is considered by USFWS to be critical habitat for the Yellow River population due to the sturgeon's use of deep holes, which are located in and near the river, as summer resting areas (USFWS 2003). The Blackwater River is critical habitat from its confluence with Big Coldwater Creek to Blackwater Bay. The lateral extent of critical habitat in the Blackwater River is the ordinary high water



line on each bank. The project is located north of Cooper Basin, a known congregating, resting, and staging area for Gulf sturgeon during migration (Berg 2004, USFWS personal communication). The use of the Blackwater River as a spawning site is currently unknown (USFWS, personal communication). No FNAI occurrences were present within two miles in the 2009 data set.

### 3.2.2. Reticulated Flatwoods Salamander

Designated critical habitat for the RFS is located in the SR 87 alignment alternatives. The primary constituent elements for this species include: breeding habitat, non-breeding habitat, and dispersal habitat.

**Breeding habitat** consists of small (less than one to ten acres) acidic, depressional, freshwater wetlands that are seasonally flooded in the late fall or winter and dry in the late spring or early summer. These wetlands are geographically isolated from other waters and occur in pine flatwood savannas. The wetlands have a relatively open canopy and are dominated by an herbaceous layer of grasses and forbs with an overstory of pond cypress (*Taxodium ascendens*), black gum (*Nyssa sylvatica* var. *biflora*), and slash pine (*Pinus elliotii*). Burrowing crayfish are typically present, but large predatory fish are generally absent. FLUCFCS habitat types associated with potential breeding habitat include cypress (621), mixed forest wetland (630), vegetated non-forested wetland (640), and freshwater marsh (641).

**Non-breeding habitat** is characterized by mesic pine flatwood savannas that are maintained by frequent fires. These uplands must be located with 1,500 feet of adjacent and accessible breeding wetlands. Crayfish burrows or other underground habitat must be present. Non-breeding habitat includes soils with a spodic horizon which sometimes inhibits subsurface water penetration, resulting in moist soils with water at or near the surface. A groundcover layer dominated by wiregrass is present providing support for herbaceous invertebrates which are the primary food source. The FLUCFCS habitat type associated with non-breeding habitat is pine flatwoods (411).

**Dispersal habitat** is an upland area between breeding and non-breeding habitat that allows for movements of the salamander between the areas. These areas contain a mix of vegetation types that represent a transition between upland and wetland vegetation and have an open canopy with an abundant herbaceous layer. Moist soils and subsurface structure are present.

Critical habitat unit RFS2A is present within the project alignments. RFS2A is 162 acres in size and is located on private land northeast of Milton. The final rule (74 FR 6700; February 10, 2009) states that this critical habitat unit contains all of the primary constituent elements and supports multiple life stages for the reticulated flatwoods salamander. The critical habitat unit was known to be occupied at the time of listing, but has not been surveyed since the time of initial listing. The project may affect this critical habitat unit; however, avoidance and minimization methods such as bridging the pond area and collection of stormwater runoff in ponds outside of the critical habitat unit are being considered to minimize project related impacts. Actual impacts to the critical habitat unit will depend on the final alignment, design, and construction methods.



## Chapter 4 — Environmental Baseline

A preliminary desktop analysis was conducted on the alternative alignments in 2010 and 2011. Following the desktop review, wetlands and threatened/endangered plant species surveys were conducted for the alternative alignments.

### 4.1. Wetland Evaluation

Assessments of wetlands and environmental resources within the project study area were conducted as part of the PD&E. A separate document, the Wetland Evaluation Report (WER), dated May 2012, has been prepared for this project. The purpose of the WER was to document any potential impacts to jurisdictional wetlands and the efforts taken to avoid, minimize, and mitigate for these impacts. The WER includes a summary of the literature searches, field reviews, and mapping conducted for this project. In addition, the WER includes the assessment of the functional values of all existing wetland habitats within the study area and coordination conducted with the USACE, FDEP, NFWFMD, USFWS, FWC, and NMFS. At the study area level, an initial desktop habitat evaluation was conducted based on photo interpretation of both historic (1940) and recent (2010) aerial photos. Wetland lines were flagged in the field and FNAI classifications were assigned to each wetland polygon based on FNAI, NWI, and FLUCFCS classification schemes. Natural wetland systems within the study area included wet prairie / seepage slopes, basin swamps, dome swamps, and bottomland forests.

The No-Build alternative would not result in any wetland impacts. There are approximately 57 acres of wetlands within the Alternative 1 alignment and approximately 55 acres of wetlands within the Alternative 2 alignment. Approximately 35 acres of wetlands within Alternative alignment 1 and 31 acres of wetlands within Alternative alignment 2 are proposed for direct impact. Potential shading impacts consist of 22 acres. Alternative alignments 1 and 2 and there will be approximately 139 acres of indirect and cumulative wetland impacts. For specific information, please refer to the WER for the location and flagging scheme of these wetland boundaries. Wetland impacts have been avoided and minimized to the maximum extent practicable by bridging the high quality and sensitive wetlands associated with the Blackwater River, Clear Creek, and RFS critical habitat. Mitigation will be required for direct, as well as some indirect wetland impacts (as deemed necessary by FHWA, FDOT, USACE, NFWFMD, and other appropriate resource agencies).

### 4.2. Gulf Sturgeon Population Status

The Gulf sturgeon is an anadromous species that migrates upriver from the Gulf of Mexico in the springtime to spawn. As part of the sturgeon lifecycle, the species is known to acclimate to fluctuating salinity levels through osmoregulation as early as age 1 (Wooley and Crateau, 1985; Altinok et al., 1997). The Gulf Sturgeon is a slow-maturing fish, with females requiring 8 to 12 years to reach sexual maturity, while males take 7 to 10 years.

The known range for this species is primarily along the Florida coast, but the species also has been identified in Lake Pontchartrain, Louisiana; the Mobile River system in Alabama; and the Pascagoula and Pearl Rivers in Mississippi. There has been limited study of the Escambia River, Blackwater River, and Yellow River population of sturgeon; however, research indicates that sturgeon reside in the Gulf





of Mexico and Pensacola Bay during the winter and then move upstream in the rivers in the spring (Berg 2004; Fox et. al., 2002). Through the use of acoustic tracking devices and receivers, the USFWS found that Cooper's Basin on the Blackwater River is a known resting area for sturgeon (Karen Herrington, USFWS personal communication, August 2012). There is some interchange between the Yellow River and the Blackwater River population (Berg 2004). The 5 year status review (USFWS, 2009) estimates the number of sturgeon in the Yellow River population at approximately 1,500 individuals in 2003, however, USFWS still recommends managing the Gulf sturgeon as a threatened species. The Blackwater River population is being studied in greater detail following the Deepwater Horizon Oil Spill, but results of the additional assessment have not yet been published. Currently, USFWS (personal communication) has indicated that population and movement data within the action area is not available.

**Table 5. Population Estimate from 2009 5-year Status Review (USFWS, 2009)**

Year of Data Collection	Abundance Estimate	Lower Bound 95% CI	Upper Bound 95% CI	Source
2001	566	378	943	Berg et al. 2007
2002 spring	500	319	816	Berg et al. 2007
2002 fall	754	408	1,428	Berg et al. 2007
2003 spring	841	487	1,507	Berg et al. 2007
2003 fall	911	550	1,550	Berg et al. 2007

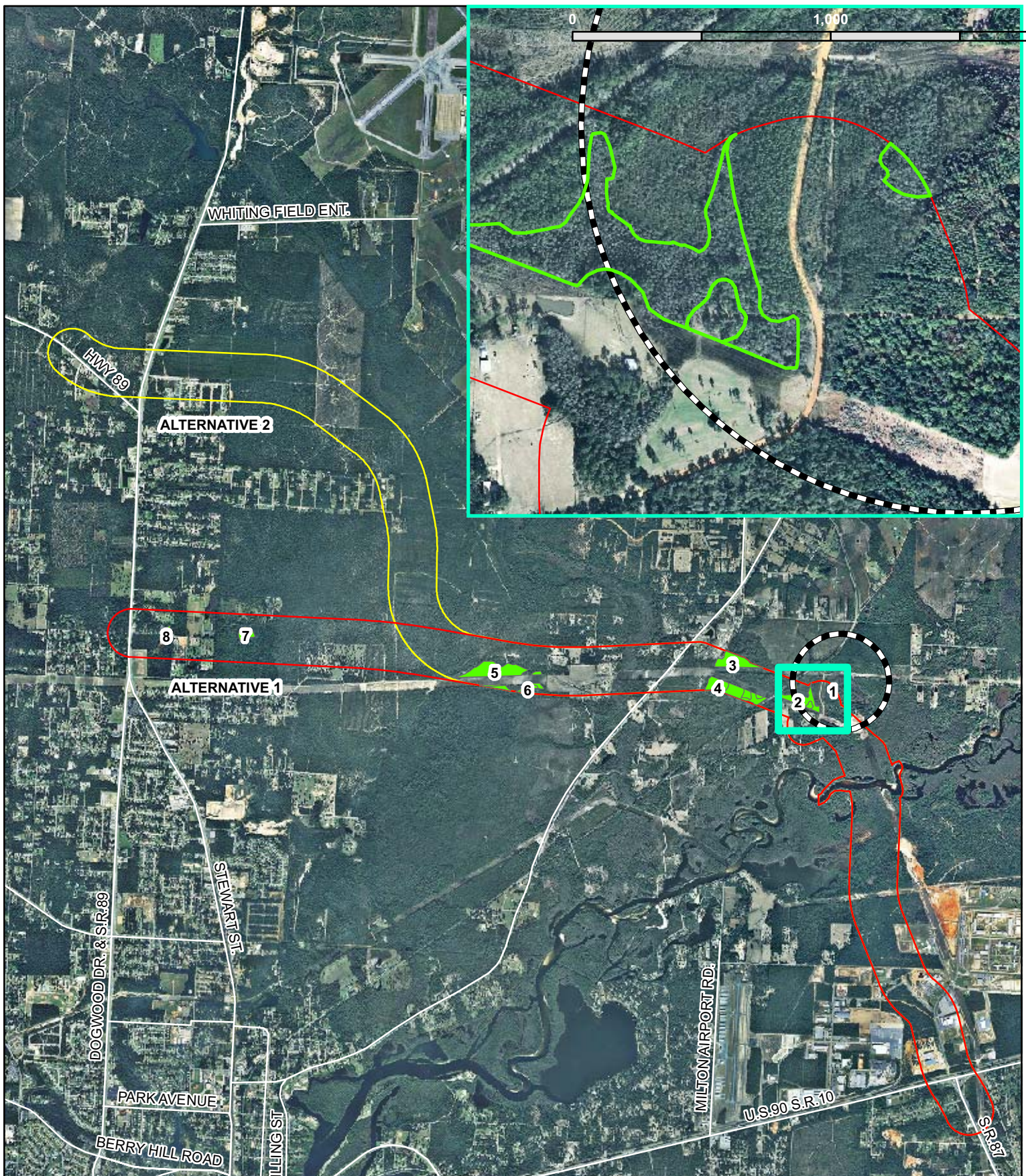
#### **4.3. Reticulated Flatwoods Salamander Population Status**

RFS were located in RFS2A during 1993 surveys by John Palis. There have been no subsequent surveys of this critical habitat unit; however, it is presumed by USFWS to still be occupied even with habitat disturbances from pine plantations, pastureland, and powerline ROW (USFWS personal communication). RFS are difficult to locate since they are fossorial species so a cause/effect relationship is developed between critical habitat impacts and individual impacts. The current population status within the critical habitat unit is currently unknown.





Following submittal of the ESBAR, ERC conducted a desktop assessment of potential RFS habitat along the length of each alternative alignment. Methods for assessing and scoring/grading potential RFS habitat have been previously established. HDR, Inc., in conjunction with the USFWS and the FWC on behalf of the FDOT, developed a method ("HDR Method") that was utilized for the US Highway 98 widening project in 2001. The HDR Method is applicable for both the RFS and the frosted flatwoods salamander. As such, the HDR Method was followed in conducting a desktop review to identify potential RFS breeding ponds and necessary supporting habitat associated with the SR 87 Connector alternative corridors and alignments. The methodology included evaluation of spatial data layers including FLUCFCS, NWI, and NRCS soils. These data layers were intersected to determine suitable habitat, which resulted in eight pond/wetland areas (Figure 17).

Eight unique potential RFS breeding ponds were identified in the desktop analysis (Appendix C). The eight potential RFS breeding ponds are separated by natural features such as upland areas or manmade features such as powerline easements, roadways, and trails. These ponds were field verified and scored, using the HDR Method, in August 2012, resulting in scores shown in Table 6.





**Legend:**

-  Reticulated Flatwoods Salamander Critical Habitat Unti RFS2
-  Potential RFS Breeding Ponds
-  Alignment 1 Buffer
-  Alignment 2 Buffer

0 2,000 4,000 8,000 12,000 Feet

N  
1:48,000  
2010 True Color  
Aerial

**Fig 17. *Potential Ponds  
& Critical Habitat Map***

**SR 87 Connector PD&E**

 Ecological Resource  
Consultants, Inc.

dv 6.6.12  
ERC# 12-159



**Table 6. Summary of Potential Pond Scores based on the HDR Method**

Pond Number	FLUCFCS Code	Pond Score	Ecotone Score	Upland Score	Total Score	Quality
1	630	3	2	1	6	Moderate-High
2	621	2	1	1	4	Low-Moderate
3	630	1	0	0	1	Low
4	630	1	0	0	1	Low
5	630	1	0	0	1	Low
6	630	1	2	0	3	Low
7	621	2	1	0	3	Low
8	621	0	0	0	0	Low

Potential RFS breeding ponds 1 and 2 are located within the known RFS2A Critical Habitat Unit as depicted on Figure 8. These potential RFS breeding ponds received the highest scores out of all the pond/wetland areas. Pond 1, which is located on the outermost edge of the 1,500 foot desktop analysis buffer and in the center of the critical habitat unit, is the highest scoring pond and the only pond that would likely support RFS due to appropriate habitat conditions. Potential RFS breeding ponds 3-8 scored low due to poor pond conditions related to incorrect habitat types, the evidence of flowing water in the ponds, fire suppression, overgrown ecotones, and poor quality uplands that were planted in pine and/or contained inappropriate habitat types (sandhills instead of mesic pine flatwoods). Photographs have been taken within each potential pond/wetland and HDR Scoring sheets were included with the desktop analysis.





## Chapter 5 — Effects Analysis

### 5.1. Direct Effects

The SR 87 Connector project may potentially have direct effects on the critical habitat of both the Gulf sturgeon and the RFS. Direct effects to the critical habitat units are associated with bridge construction. Bridge construction may result in direct habitat impacts resulting from piling installation including sediment disturbance and turbidity, noise and vibration, and movement of construction equipment.

#### 5.1.1 Gulf Sturgeon

Gulf sturgeon movement within the Blackwater River could potentially be affected by the proposed in-water work. Gulf sturgeons are known to use the Blackwater River for resting and spawning throughout the Spring, Summer, and Fall (USFWS 2003). Gulf sturgeons have been located within Cooper's Basin, which is approximately 2 river miles downstream from the construction site, and use the area as a resting or staging area during the summer (USFWS 2003). Studies of Gulf sturgeon movement within the Blackwater River are limited and the population size is unknown. The Yellow and Blackwater River populations are thought to be interconnected and the most recent Yellow River population estimate was approximately 1500 individuals (USFWS 2009). Based on available data, restricting construction activities between March – April and October - November can minimize potential direct harm to the species, therefore, in-channel work restrictions have been proposed for this period. This work restriction is based on the USFWS standard Gulf sturgeon protection measures.

The current alignment alternatives cross the Blackwater River north and east of Cooper Basin. Based on the preliminary design, two pile bents consisting of 17 bridge support pilings, totaling approximately 68 square feet, would be installed in the river. The total length of the bridge is approximately 5,570 linear feet with approximately 180 linear feet over the Blackwater River. The footprint of the bridge over the Blackwater River is approximately 180 feet long x 105 feet wide and totals 18,900 square feet (0.43 acres). All stormwater runoff from the bridge will be collected and conveyed to stormwater treatment ponds outside of the critical habitat unit, which will minimize impacts to wetland and water quality within the ponds. Work in the critical habitat will also be restricted so that construction does not take place during the time of year when the Gulf sturgeons are using the river.

During in-channel work, pilings will be installed after a "ramp-up" procedure that will alert any Gulf sturgeon within the vicinity of the construction site. These construction restrictions and construction techniques will limit the potential that Gulf sturgeons are exposed to harm, harassment or take during construction.

The only proposed, permanent and direct impact to the Gulf sturgeon critical habitat are associated with the bridge support pilings, which total approximately 68 square feet (0.0016 acres) of the approximately 14.7 acres of critical habitat within the action area. There are approximately 1,730 river miles of designated Gulf sturgeon critical habitat. The total length of the bridge is approximately 5,570



linear feet with approximately 180 linear feet over the Blackwater River. The footprint of the bridge over the Blackwater River is approximately 0.43 acres.

Pile driving may also affect Gulf sturgeon due to the noise and vibration of the equipment. In order to minimize impacts to Gulf sturgeon that may be utilizing the river at the time of construction, the contractor will “ramp-up” for piling installation by conducting several (up to five) soft hammer blows before commencing the harder hammer blows. The “ramp-up” will alert fish that construction is commencing and give them time to move away from the construction site.

The Blackwater River Bridge will commence on the south side of the river to the west of the existing powerline ROW. The river will be spanned and a minimum number of pilings will be installed in the river. Dredging and the use of explosives in or adjacent to the river will be eliminated. Sturgeon migration corridors would not be blocked or impeded. Floating turbidity barriers will be used during the construction of the piers and other in-channel work. In-channel construction will be minimized during migratory periods, from March through April and October through November, but a more specific time period that is based on the sub-population using the Blackwater River can be developed in conjunction with USFWS. Direct discharge from the bridge deck will be collected and treated in permitted stormwater ponds prior to any discharges. The Blackwater River is an OFW, which requires specific BMPs during construction and stormwater design to prevent degradation to the river. The increased BMP and stormwater requirements will minimize impacts to the Gulf sturgeon. Construction staging areas will be located outside the floodplain.

#### 5.1.2 Gulf Sturgeon Primary Constituent Elements

1. The SR 87 project is not likely to adversely affect the river aggregation area, Cooper’s Basin, since the project is located approximately 2 miles upstream from the basin and due to the implementation of erosion control measures and OFW standards to prevent stormwater runoff.
2. Food and prey items are not likely to be impacted since the sturgeon does not feed within the Blackwater River and the implementation of OFW standards will minimize impacts to water quality.
3. The Blackwater River is not a known spawning site, however, spawning may occur upstream of the SR 87 project site.
4. The SR 87 project is not likely to result in any modification to the overall flow regime within the Blackwater River. The site will be spanned with a minimum number of pilings and columns installed within the river and the river will ultimately retain the same flow regime. The river will not be permanently or temporarily impounded.
5. Water quality within the Blackwater River is not likely to be adversely impacted as a result of the implementation of OFW standards. A minimum of in-channel work within the Blackwater River will occur and the floodplain will be bridged. Stormwater runoff will be captured and treated prior to discharge.
6. Sediment quality within the river is not likely to be adversely impacted by the project. The site will be maintained to OFW standards, which will result in minimum runoff or discharge to the river.
7. The SR 87 project is not likely to adversely impact the migratory pathway within the Blackwater River. The site will be spanned with a minimum number of pilings and columns installed within the river and the river will ultimately retain the same flow regime. The river will not be permanently or temporarily impounded.



### 5.1.3 Reticulated Flatwoods Salamander

In order to avoid a larger acreage of impact to the RFS2A ponds and critical habitat area and the higher quality pond area in the center of the RFS2A, the alignment was shifted to the south in January 2012 (See Figure 5). The original alignments traversed the critical habitat at its widest point and would have impacted a larger acreage of the RFS2A than the currently proposed alignment (30 acres versus 8.3 acres or 18% of the total unit versus 5% of the total unit). The pond area that was proposed for impact by the first alignment was a higher quality pond that supported the primary constituent element requirements for the flatwoods salamanders. This pond area had the appropriate pond hydroperiod; a diverse herbaceous ecotone; and less disturbed adjacent uplands. The alignments were then shifted to the north closer to the powerline ROW; however, the alignment still would have impacted a large portion of the critical habitat unit, a larger acreage of the pond area than the currently proposed alignment, and a higher quality portion of the pond area. The third alignment shift is the current proposal. The current alignment impacts a more disturbed portion of the critical habitat that is comprised of powerline ROW and pastureland and overall less acreage of the critical habitat than the previously proposed alignments.

The potential direct impacts to the 162 acre RFS2A critical habitat unit are limited to the 680 bridge support pilings, which total approximately 2,720 square feet (0.06 acres). The total length of the bridge is approximately 5,570 linear feet with approximately 1,663 linear feet over the critical habitat unit. The footprint of the project alignment through the mapped critical habitat unit is approximately 8.3 acres (5% of the overall critical habitat unit) and is comprised of approximately 5.58 acres of upland areas (non-breeding habitat) that are disturbed by existing road, powerline ROWs, and pasture and approximately 2.72 acres (breeding and dispersal habitat) of low-moderate RFS potential wetlands.

Within the project alignment, approximately 0.24 wetland acres are located within the powerline ROW, and heavily impacted through regular maintenance, resulting in a lack of pine flatwoods and no overstory surrounding this portion. A local unpaved road totaling approximately 0.8 acres is located within the alignment and does not meet the definition of primary constituent element since it is not a pine flatwoods savanna community, is compacted, and does not contain crayfish burrows or wiregrass dominated herbaceous vegetation. The upland portion of the powerline ROW is approximately 2.19 acres but does not meet the primary constituent elements for non-breeding habitat since it is not a pine flatwoods savanna community due to the regular maintenance of the ROW. Although these areas are located within the project right of way, these areas are degraded and do not contain the primary constituent elements as defined for critical habitat.

The project would result in 0.012 acres (544 square feet) of direct impacts to the 2.48 acres of low-moderate quality RFS breeding and dispersal habitat located within the project alignment. The direct impact is the result of the driven pilings needed to support the bridge. The project would result in 0.006 acres (272 square feet) of direct impacts to upland dispersal habitat as a result of the pilings needed to support the bridge.

The temporary, direct effects within the bridge footprint include movement of construction equipment, placement of mats within wetlands to minimize impacts to soils, and vegetation removal that may result in the removal of root systems. These construction practices may also result in





temporary increases in turbidity within wetland/pond water levels and may result in temporary impacts to wetland hydrology. Construction of the approximately 5,570 linear foot bridge over the RFS2A critical habitat unit will minimize any potential direct project effects.

Once completed, all stormwater runoff from the bridge will be collected and conveyed to stormwater treatment ponds outside of the critical habitat unit, which will minimize impacts to wetland and water quality within the ponds.

## **5.2. Indirect Effects**

The Gulf sturgeon and RFS critical habitat units will be bridged, which will minimize potential indirect impacts. The bridge and associated roadway will be limited access and all stormwater from the finished bridge surface will be collected and treated in proposed stormwater ponds located outside of the critical habitat units. Vegetation beneath the bridge will be cut during construction, but will be allowed to regrow from the existing seedbank after construction is completed. Due to bridging both critical habitat areas, secondary and indirect effects to the species are limited in geographic extent to the area directly adjacent to the bridge.

Secondary and indirect effects may result from normal bridge operation and maintenance procedures, but can also be minimized using best management practices. The following are potential indirect effects and potential BMPs to minimize their impact on Gulf sturgeon and RFS habitat.

- Cleaning the bridge sub-structure is an important preventative maintenance measure that will be employed through the life of the bridge. Impacts from cleaning the bridge can be minimized by collecting wastewater and using cleaning agents that are less harmful to the species.
- Since the bridge structure will be made of concrete, painting the bridge supports may not be necessary. If necessary, potential indirect impacts during painting operations can be minimized by conducting work from a maintenance traveler, platform, or over a suspended tarp to capture paint or paint removing agents and prevent discharge into water or wetlands below the bridge.
- Noise and vibration from traffic on the proposed bridge may result in minor indirect effects to terrestrial and aquatic species, however, the background level noise and vibration is not likely to impact Gulf sturgeon. For the fossorial RFS minor piling vibration will likely be buffered by surrounding soil and will only cause minor disturbance in the close vicinity of pile caps.
- Maintenance access will be required underneath the bridge in order to assess bridge conditions, repair the structure, and control invasive species. These indirect impacts will be required throughout the life of the project; however, these impacts can be minimized by accessing the bridge area from the adjacent powerline ROW, which has previously been used for access and is regularly maintained using mowing and herbicide application. If the existing ROW is used for access, the potential indirect impacts from increased access to the bridge area will be minimal.



### 5.3 Cumulative Impacts

Overall cumulative impacts are anticipated to be associated with direct impacts associated with the construction of the SR 87 Connector project. The critical habitat area for the Gulf sturgeon and the critical habitat area for the reticulated flatwood salamander will be bridged, which will result in minimal impacts to habitat and is not likely to adversely affect either species. In addition, the project will utilize OFW standards, which include treatment of all stormwater runoff on the finished structure prior to discharge in the Blackwater River and around the RFS critical habitat unit.

### 5.4. Minimization Measures

#### 5.4.1. Gulf Sturgeon

##### 5.4.1.1 Design & Construction Considerations

- Avoiding in-channel work from March – April and October - November
- Constructing a bridge over the Blackwater River and the associated floodplain
- Collecting all stormwater from completed bridge surface and conveying it to stormwater ponds
- Using erosion and sedimentation BMPs during in-channel work
- Conducting soft “ramp-up” pile driving blows to alert fish
- Use of pile bents instead of columns on piling caps. This modification results a reduction in direct impacts from 0.05 acres to 0.0016 acres

##### 5.4.1.2. Operations and Maintenance Considerations

- Conducting maintenance work from maintenance traveler, platform, or over a suspended net or tarp
- Using sanders with vacuum filter bags
- Collecting all wastewater from cleaning and maintenance operations

##### 5.4.1.3 Other Considerations

- FDOT will purchase, donate, or fund the purchase of up to four fish tag receptors for use in the Blackwater River system, in an amount not to exceed \$5,000. FDOT requests copies of processed and/or raw data obtained from the receptors for use in future project efforts.

#### 5.4.2. Reticulated Flatwoods Salamander

##### 5.4.2.1 Design & Construction Considerations

- Constructing a bridge over the critical habitat unit and over the most disturbed portion of the critical habitat unit
- Collecting all stormwater from the completed bridge surface and conveying it to stormwater ponds located outside of the critical habitat unit
- Using erosion and sedimentation BMPs during work in ponds/wetlands
- Installing mats during construction to minimize impacts to the soil surface
- Use of pile bents instead of columns on piling caps. This modification results a reduction in direct impacts from 0.09 acres in low to moderate quality breeding and dispersal habitat and 0.06 acres of moderate quality upland dispersal breeding habitat to 0.012 acres of direct impacts of low-moderate quality breeding and dispersal habitat and 0.006 acres of upland dispersal habitat.





#### 5.4.2.2. Operations and Maintenance Considerations

- Conducting maintenance work from maintenance traveler, platform, or over a suspended net or tarp
- Using sanders with vacuum filter bags
- Collecting all wastewater from cleaning and maintenance operations
- Accessing the ROW for construction and maintenance from maintained powerline easement

#### 5.4.2.3 Other Considerations

- FDOT will provide compensation for the loss of Reticulated Flatwoods Salamander habitat through a monetary contribution to a land-management state agency or non-governmental organization for habitat preservation or other activities that contribute to the conservation of the reticulated flatwoods salamander.
- If possible, the initial consideration would be for the funds to be used towards land acquisition within the same basin to allow for the purchased property to also be utilized as Section 404 wetland mitigation.
- The funds would be calculated using a formula based on the acreage and appraised value of impacted habitat. The final calculation may be increased or decreased based on the actual impacted acreage but should not vary by more than 25 percent. The appraised value would be determined through the FDOT Real Estate Acquisition process.
- Compensation would be provided at a ratio based on an average of the preliminary UMAM scores as included within the WER. UMAM scores and mitigation are not final until determined by the agency with jurisdiction. The project would result in 0.012 acres of direct impact from pilings to the 2.48 acres of breeding pond habitat within the portion of the alignment that is located within RFS2A. The project would result in 0.006 acres of direct impact from pilings to the 0.96 acres of upland non-breeding habitat within the portion of the alignment that is located within RFS2A.
- Calculations for replacement are based on an average of the preliminary UMAM scores as included within the WER. UMAM scores and mitigation are not final until determined by the agency with jurisdiction. The project would result in a calculated loss of 0.014 functional units of habitat (breeding and non-breeding) based on functional unit loss (0.018 acres X 0.79), which result from the piling associated with the bridge. The project would result in a calculated loss from shading to breeding and non breeding habitat of 0.51 functional units of habitat based on functional unit loss (2.54 acres X 0.20). The project would result in a calculated loss from indirect impacts to 1.00 acres of habitat based on functional unit loss [(1057 linear feet X 300 buffer feet X 2) X 0.07]. The total calculated replacement would be 1.524 functional units.

**Table 7. Calculated Replacement for Impacts to RFS2A**

	Acres	Assessment Score	Functional Unit Loss
Direct Impacts	0.018	0.79	0.014
Shading Impacts	2.54	0.20	0.51
Indirect Impacts	14.6	0.07	1.00
		Calculated Replacement Acreage	1.524



## Chapter 6 — Effect Determinations

### 6.1. Effect Determination for Gulf Sturgeon and Reticulated Flatwoods Salamander

#### **Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)**

The project “may affect, but is not likely to adversely affect” the Gulf sturgeon due to the in-channel construction work and ongoing operation and maintenance associated with the proposed bridge over the Blackwater River and its floodplain wetlands. Any potential impacts have been minimized through bridging of the Blackwater River and associated floodplain and through the implementation of OFW standards, which will minimize any potential impacts from stormwater runoff. In addition, the design modification from columns resting on piling caps to pile bents has resulted in reduced impacts. In channel work, which consists of pile driving, will not be conducted from March – April or October - November, to minimize any impacts to sturgeon which might utilize the area. Pile driving will be implemented with by conducting soft “ramp-up” pile driving blows to alert fish within the area, which will minimize any potential impacts. The direct impacts associated with the driven piles total 68 square feet (0.0016 acres) of the approximately 14.7 acres of critical habitat within the action area. There are approximately 1,730 river miles of designated Gulf sturgeon critical habitat. In addition, FDOT proposes to purchase, donate, or fund the purchase of up to four fish tag receptors for use in the Blackwater River system in an amount not to exceed \$5,000. The population status of Gulf sturgeon within the action area is unknown, however, the action area is most likely only used as a migratory pathway.

#### **Reticulated Flatwoods Salamander (*Ambystoma bishopi*)**

The project “may affect, but is not likely to adversely affect” the reticulated flatwoods salamander due to construction work and ongoing operation and maintenance associated with the proposed bridge through RFS2A. The project has been modified so that the alignment is located within the most disturbed portion of RFS2A. Also, the project will bridge the critical habitat unit, which will be implemented at a considerable additional cost, but will result in the greatest minimization to the area. Potential impacts have been reduced through a design modification changing the support structures from columns resting on piling caps to pile bents. Any potential impacts have been minimized through bridging of the critical habitat unit and through the implementation of OFW standards, which will minimize any potential impacts from stormwater runoff. Based on current information, the population status of the RFS is unknown, but the last known observation was in 1993. The project would result in 0.012 acres (544 square feet) of direct impacts (associated with pile driving) to the 2.48 acres of low-moderate quality RFS breeding and dispersal habitat located within the project alignment. The project would result in 0.006 acres (272 square feet) of direct impacts (associated with pile driving) to upland dispersal habitat as a result of the pilings needed to support the bridge.





## 6.2. Effect Determination for Critical Habitat

### **Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)**

The project is not likely to adversely affect the Gulf sturgeon critical habitat because the installation of new pilings within the Blackwater River will impact 68 square feet of critical habitat. These impacts will be minimized by bridging the critical habitat, collecting all stormwater runoff from the bridge surface, installing BMPs during construction, alerting fish within the critical habitat using soft “ramp up” blows before pile driving, using BMPs to minimize water quality impact during standard operation and maintenance activities. The project will not result in adverse modification to the critical habitat.

### **Reticulated Flatwoods Salamander (*Ambystoma bishopi*)**

The project is not likely to adversely affect the RFS critical habitat unit since the unit will be bridge in the most disturbed portion of the site. The project would result in 0.012 acres (544 square feet) of direct impacts (associated with pile driving) to the 2.48 acres of low-moderate quality RFS breeding and dispersal habitat located within the project alignment. The project would result in 0.006 acres (272 square feet) of direct impacts (associated with pile driving) to upland dispersal habitat as a result of the pilings needed to support the bridge. Any potential impacts will be minimized by collecting all stormwater runoff from the bridge surface, installing BMPs during construction, using mats during construction to minimize soil disturbance, and using BMPs to minimize water quality impact during standard operation and maintenance activities. The project will not result in adverse modification to the critical habitat.

## 6.3. Overall Effect Determinations

**Table 8. Overall Effect Determinations Summary Table**

Species	Effect Determination for Stormwater Runoff	Effect Determination for In-Channel Work	Effect Determination for Clearing, Grubbing, & Construction	Overall Effect Determination for Project
<b><u>Gulf Sturgeon (<i>Acipenser oxyrinchus desotoi</i>)</u></b>	No effect	May effect, not likely to adversely affect	May effect, not likely to adversely affect	May effect, not likely to adversely affect
<b><u>Reticulated Flatwoods Salamander (<i>Ambystoma bishopi</i>)</u></b>	No effect	No effect	May effect, not likely to adversely affect	May effect, not likely to adversely affect



## Chapter 7 — References

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## Appendix A — USFWS Correspondence



**From:** John Flora <JFlora@metriceng.com>  
**Sent:** Wednesday, May 16, 2012 9:18 AM  
**To:** Dan Van Nostrand

Hi Peggy -

Thanks for sharing the draft ESBAR early for my comments. I'm glad to see the corridor has shifted to the south within the reticulated flatwoods salamander critical habitat unit (RFS-2A), and that FDOT proposes to bridge the area. Those changes go a long way toward reducing direct and indirect effects to the unit. Similarly, bridging the Blackwater River floodplain-to-floodplain and restricting in-water work to outside the Gulf sturgeon migratory period significantly reduces impacts from the project on sturgeon and their critical habitat (Unit 4-Yellow River System). In reading through the ESBAR I do have a few comments.

#### Reticulated flatwoods salamander

1. The analysis for the reticulated flatwoods salamander is incomplete. It should look at effects both to the species and its habitat, as well as to the critical habitat unit. To fully evaluate the effects to the species, the HDR model should be used for the length of the corridor to determine if potential habitat is present. We told the consultant this both during the field review and by email (attached). Especially this close to a known pond, other potential ponds may be present.
2. Even though bridging and the new alignment location greatly reduce effects to unit RFS-2A, there still will be impacts to the habitat within the unit. Some of these effects may include, but aren't limited to: direct habitat loss/degradation from the placement of bridge supports, temporary construction area, shading, altering water quality and quantity; and indirect effects such as reduced potential for future land management activities such as prescribed burning and increased human access. An effect determination of "may affect, not likely to adversely affect" (NLAA) is reached when effects on listed species are insignificant (not measurable) and discountable (extremely unlikely to occur). As long as impacts are occurring to habitat within the unit, we recommend initiating formal consultation to assure that FDOT and FHWA are covered for potential incidental take of the flatwoods salamander. Formal consultation will also look at the potential for your action to adversely modify the critical habitat unit - or determine whether there is a loss of the unit's conservation function.

#### Gulf sturgeon

1. The ESBAR includes a commitment to avoid in-water work from April through October. This commitment is a key factor toward reaching your NLAA effect determination. In order to assure that no fish are in the area during in-water construction activities, we recommend extending this window to March through November. Currently our office lacks the data necessary to more narrowly define when fish move through the area proposed for construction. In the future, our office may be able to place receivers near your proposed project area to better define when fish are present and your commitment could then be revised as appropriate.
2. In addition to commitments to limit in-water work to outside the sturgeon's migratory window and following sturgeon construction guidelines, we recommend adding the following commitments to help support your NLAA determination for Gulf sturgeon and its designated critical habitat. Some of these are discussed in the ESBAR but no commitments were provided.
  - Placement of piles in the river should be avoided if possible. If placement in the river is unavoidable, piles should be minimized to the extent practicable.

- Innovative, environmentally sensitive construction techniques should be used such as top-down construction.
- If siltation barriers are used within the river, they should be made of material in which a sturgeon cannot become entangled, be properly secured, and be regularly monitored to avoid entrapment. Barriers should not block entry to or exit from designated critical habitat.
- If a sturgeon is seen within 100 yards of the active daily construction operation or vessel movement, all appropriate precautions should be implemented to ensure its protection. These precautions should include cessation of operation of any moving equipment closer than 50 feet of a sturgeon. Operation of any mechanical construction equipment should cease immediately if a sturgeon is seen within a 50-foot radius of the equipment. Activities should not resume until the protected species has departed the project area of its own volition.
- Stormwater should be collected and conveyed off of the bridge to treatment ponds to eliminate run off during construction and operation.
- Equipment should be staged and stored in areas without environmentally sensitive habitats, including the docking, removal, or storage of boats during periods of inactivity.
- Native vegetation should be planted immediately following completion of construction and erosion control measures should be removed only after vegetation has become fully established.
- All applicable Best Management Practices (BMPs) should be implemented to control erosion, sedimentation, and turbidity. An erosion control plan should be submitted to the Service for approval prior to the start of construction.

3. Provided that the above recommendations are met, the Service could concur with your determination of NLAA for the Gulf sturgeon. However, if FDOT is unable to complete all in-water work outside of the peak migratory periods for the sturgeon, or if FDOT wants to plan in advance for potential project delays that may result in a need to work during the migratory period, we recommend initiating formal consultation. Formal consultation includes reasonable and prudent measures with terms and conditions that could reduce the impacts of the project should work take place while fish are likely to be present.

#### West Indian manatee

1. As the project is located in waters accessible to the manatee, we recommend including appropriate Standard Manatee Construction Conditions for this project. Note that measures c and f are not required in Santa Rosa County.

#### Rare plants

The ESBAR indicated that two plants considered "at-risk" by the Service were identified during surveys in the project corridor: the panhandle lily (*Lilium iridollae*) and small-flower meadow beauty (*Rhexia parviflora*). A list of at-risk plants is attached for your information. The Service received a formal request to list these species and our 90-day finding indicated that listing may be warranted. At present we are in the process of assessing the status of these species. We would greatly appreciate it if you could provide further information such as the number of plants and their GPS locations to assist with our status assessment. While not currently protected under the Endangered Species Act, conserving these species now may prevent the need to list them in the future. We recommend avoiding potential impacts to these plants to the extent practicable. It would also assist our review of the ESBAR if the occurrences of these species used an alternate symbol to clearly identify them. Some colors in the legend are difficult to differentiate.

Everything else looks good! Thanks again for the opportunity to provide comments.

(See attached file: 20121209\_em\_Mittiga to Van Nostrand, HDR model for potential habitat SR 87.pdf)(See attached file: 2011\_StandardConditionsForIn-waterWork.pdf)(See attached file: Species at risk.docx)

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Mary Mittiga/R4/FWS/DOI

07/12/2012 01:59 PM

To peggy.kelley@dot.myflorida.com

cc Harold Mitchell/R4/FWS/DOI@FWS, Karen  
Herrington/R4/FWS/DOI@FWS

bcc

Subject Fw: SR 87 Connector Draft ESBAR

Hi Peggy -

I've read through the desktop analysis for the reticulated flatwoods salamander. That looks good - and can be included as an attachment to the ESBAR. Again, the shift of the alignment to the south and use of bridging are very effective in reducing the scope of impact. However, I still have some unanswered questions from my previous email below. The ESBAR should be updated to address these issues:

Reticulated flatwoods salamander

1. The effect determination for the reticulated flatwoods salamander should be re-evaluated. We recommend formal consultation since at this time it appears that the corridor will be impacting habitat (Pond 2 as well as upland and dispersal habitat) within the critical habitat unit RFS-2A.

Gulf sturgeon

1. Can the in-water work restrictions be extended as suggested below (see below Gulf sturgeon #1)?  
2. Can the additional commitments be made (see below Gulf sturgeon #2)?

If the timing restrictions can't be met, we recommend initiating formal consultation for Gulf sturgeon.

Rare Plants

1. Can additional information be provided on the number of plants and their locations for the two species of at-risk plants identified in the ESBAR (see below)?  
2. Can impacts to these plants be avoided to the extent practicable?

I'm available to meet with you if you'd like to discuss further! Thanks, Mary

Mary A. Mittiga  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
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----- Forwarded by Mary Mittiga/R4/FWS/DOI on 07/11/2012 03:01 PM -----



Mary Mittiga/R4/FWS/DOI

05/16/2012 06:30 AM

To <peggy.kelley@dot.myflorida.com>

cc

Subject Re: SR 87 Connector Draft ESBAR

Hi Peggy -

Thanks for sharing the draft ESBAR early for my comments. I'm glad to see the corridor has shifted to the south within the reticulated flatwoods salamander critical habitat unit (RFS-2A), and that FDOT proposes to bridge the area. Those changes go a long way toward reducing direct and indirect effects to the unit. Similarly, bridging the Blackwater River floodplain-to-floodplain and restricting in-water work to outside the

## ***SR 87 Connector PD&E***



### ***Meeting Minutes***

August 27, 2012

8:00 AM – 9:00 AM (CST)

Meeting to discuss the species considerations related to the SR 87 Connector PD&E, previous USFWS comments, and Desktop Analysis Results

Meeting Facilitator: John Flora (Metric Engineering) & Daniel Van Nostrand (ERC)

Attendees: Joe Sullivan (FHWA), Peggy Kelley (FDOT), Mary Mitiga (USFWS), Harold Mitchell (USFWS), Karen Herrington (USFWS), John Flora (Metric), Jessica Bloomfield (Metric), Nicole Mauntler (Metric), and Daniel Van Nostrand (ERC)

#### **I. May 16, 2012 ESBAR Comment Email**

- Dan provide brief discussion of email comments to recap the determinations and the status of USFWS's opinions related to Gulf sturgeon and reticulated flatwoods salamander
- Peggy stated that FDOT was not in agreement with the entire email and that more discussion was needed especially related to the Gulf sturgeon commitments.
- Mary stated that "in-water" work was only referring to pile driving not just having a barge in the water.
- Peggy asked if we could follow similar timelines as the Yellow River consultation.
- Mary stated that the specifics related to this project would have to be discussed.
- Harold described that Gulf sturgeon impacts would have to be assessed related to the Primary Constituent Elements of the species and their critical habitat.

#### **II. Desktop Analysis, Field Survey, and Project Modifications**

- Dan described the reticulated flatwoods salamander desktop analysis, and that the analysis resulted in 8 potential pond areas. Only the known pond area within the critical habitat had decent habitat quality and appropriate habitat type to support flatwoods salamanders.
- Mary agreed that the majority of the habitat was not suitable and said the desktop analysis looked good.

- Dan described that the bridges had been lengthened, that the stormwater ponds were all located outside of the critical habitat unit, and that all stormwater would be collected to minimize impacts. He asked if formal consultation for RFS was still necessary.
- Mary stated that those were all good avoidance and minimization measures but that the only time formal consultation is not required is when they can demonstrate that impacts to the species or habitat will be insignificant or non-detectable. As such, formal consultation would be required for the flatwoods salamander.

### **III. Potential Formal Consultation**

#### **Gulf sturgeon**

- Mary stated that consultation would be necessary if FDOT cannot agree to the March through November construction condition. If FDOT wants to work outside the March through November guideline, then they could discuss with FHWA initiating formal consultation.
- Karen stated that in water work is only the installation of pilings and that work on the piling caps and the decking would not constitute in water work. Working outside of the restricted window would constitute an insignificant affect.
- Jessica stated that there would most likely be approximately 18-20 pilings in the river.
- Peggy stated that FDOT cannot commit to the construction window and wants to coordinate with FDOT construction and structure folks.
- Joe stated that consultation takes 135 days complete and asked Mary and Karen what the main impact was to the sturgeon.
- Mary stated that it could affect the sturgeon's movement up the river.
- Joe stated that there would be substantial open area north and south of the piling installation for the sturgeon to move during construction.
- Karen indicated that the other impacts include noise, turbidity, vibration, and not just the location of the construction.
- Joe asked for literature related to the effects of vibration on fish migration and for Mary to provide the requested literature.
- John asked what kind of information USFWS would be looking for in the Biological Assessment.
- Mary stated that they would need to know information about the bridge design, the scope of the impact, the construction methodology, the timeline, and the BMPs that are proposed.
- John – what kind of mitigation would be required?
- Karen stated that there could be stream restoration or protection depending on the timing. (Peggy stated that the project would let in approx. 5 years) Since the project is starting in about 5 years, we could start a study now by installing a receiver at the bridge location. The



receiver would give us more information about the tagged sturgeon and how far upstream they go and determine if they use this portion of the river or not. If we find they do not, then formal consultation may not be necessary.

- Karen stated as an alternative that formal consultation could be conducted at the time of project letting.
- Peggy asked Mary if the standard sturgeon guidelines were no longer good since the work timeframes are always being shifted to a longer time period than the standard guidance.
- Karen stated that USFWS has worked on revised guidelines in FDOT District 2, but that it's hard to have a one size fits all approach since they do not know a ton about the species and their populations.
- Harold clarified that the USFWS was not stipulating the work timeframes and that if the FDOT wants coverage for a potential species impact without working inside the specified timeframes they should initiate formal consultation. If FDOT prefers to work outside of the timeframe, then they do not have to do formal.
- Joe asked how long the "take" provided in the formal consult conclusion (BO) is 'good for' and if there is an expiration
- Harold stated that it would depend on the type of take (whether direct individual or harassment) and that the language in the final BO specifying the take could be worded to specify a timeframe.
- Peggy asked if the timeline could be extended.
- Mary clarified that there can be flexibility in the take if we built it in and could include language that discusses re-evaluation if the project does not occur within a certain timeframe.
- Joe asked if there was a set structure for data collection and what was needed for the BA and for the USFWS to approve a take.
- Harold stated that a BA is needed to describe the possible impact.
- Karen clarified that information about the # of individuals with the potential for impact, the project timing, etc. is needed, but that there is no specific surveys that are required.
- Peggy asked if the information and timing from the Yellow River BA could be used for this project.
- Mary stated that the window is more flexible with a formal consultation.

#### **Reticulated Flatwoods Salamander**

- Peggy clarified that the impacts to salamander are because of habitat impacts in the critical habitat unit.
- Harold stated that he understands that we have pilings in the critical habitat and that he is recognizing the avoidance and minimization measures (we are getting credit for it). All critical habitat is assumed to be occupied since they err on the side of the species according to Congress. The fact that the project is FHWA funded raises the bar for the

Endangered Species Act process. The impact within the critical habitat must evaluate the species PCE's especially hydrology in this case. The formal consultation is a type of "insurance policy" from the USFWS in case of any impact or perceived impact from a challenge from Natural Resources Defense Council or other groups. For instance, pond RFS2-B was occupied in 1993, surveyed every 2-5 years without finding any RFS and then they just found RFS in the most recent survey 17 years later. For this reason they err on the cautionary side and advise FDOT to conduct formal consultation.

- Dan asked what types of mitigation measures they would consider for the RFS impacts.
- Harold stated that if the pond could be improved with prescribed fire, hydrological monitoring, and/or private land acquisition. (Peggy stated that may not be feasible due to the landowners that own the property and asked for additional suggestions). Harold mentioned that RFS2-B in the Yellow River Management area, which is managed by DOF, could be improved and considered off-site mitigation. Harold stated that half of the critical habitat ponds are on or partially on public property.
- Peggy stated she would discuss these options with Joy Giddens.

#### **IV. General Discussion**

Related to the sturgeon, Peggy needs to talk to the structures folks to see if the timelines are feasible.

Peggy asked how much take will USFWS allow – how many individuals and how is it determined.

Harold stated that they need a means for estimation and in most cases they estimate a species number / acre/ year and that they would need to evaluate the estimation method and # of individuals as part of their BO.

John asked about the procedure and general timeframe.

Mary said they need the BA.

Dan stated that he started working on the BA following the FHWA National BA template.

Harold and Mary agree that if we have all the information in the national template that we should be ok.

Peggy asked about the cost of the sturgeon tag detectors.

Karen stated that they are approximately \$1,200 / detector, that USFWS would install them, monitor them, and download data. They would also commit to sharing the data with FDOT for reporting.

Peggy stated that she would coordinate internally and that we would get back with the USFWS regarding the internal discussions.

Mary will resend her emails to Peggy so that Joe can take a look and we can decide how to move forward.

No other questions or comments and meeting adjourned at 9:20am (CST)





## Appendix B — Gulf Sturgeon Guidelines

**CONSTRUCTION SPECIAL PROVISIONS  
STURGEON PROTECTION GUIDELINES  
(PURSUANT TO NMFS AND USFWS)**

The shortnose sturgeon (*Acipenser brevirostrum*) and the gulf sturgeon (*A. oxyrinchus desotoi*) are listed under the Endangered Species Act as endangered and threatened, respectively. These species are under the jurisdiction of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). Potential habitat for the gulf sturgeon is located within the limits of this project.

The following special provisions will be incorporated into any construction contract where involvement with sturgeon may occur:

The FDOT has coordinated with the NMFS and USFWS early in the project development stage. The following provisions are intended to avoid/ protect known spawning habitats, nursery areas, feeding areas and thermal refuges.

1. The Florida Department of Transportation (FDOT) shall advise all FDOT project personnel and Contractor personnel on the project that there are civil and criminal penalties for harming, harassing or killing sturgeon, which are protected under the Endangered Species Act of 1973. The FDOT and the Contractor will be held responsible for any sturgeon harmed, harassed, or killed as a result of the project activity.
2. The FDOT shall provide information to all FDOT and Contractor personnel for identification of sturgeon.
3. No dredging of the river bottom will be conducted for barge access.
4. Drilled shaft pile construction will be used whenever prudent and feasible as determined by FDOT.
5. Care shall be taken in lowering equipment or material below the water surface and into the stream bed. These precautions will be taken to ensure no harm occurs to any sturgeon which may enter the construction area undetected.
6. If the use of explosives is necessary, the following protection measures will be employed for projects in FDOT's District 3.

In riverine areas:

- No blasting will occur in known spawning, staging, feeding, or nursery areas.
- In-water explosive work should be avoided between the months of April to October.
- If explosive work becomes necessary within the April to October time frame, a non-lethal "Fish Scare" charge will be detonated one minute prior to detonation of the underwater blast.

In estuarine areas:

- No blasting will occur in known spawning, staging, feeding, or nursery areas.
- In-water explosive work should be avoided between the months of October to April.
- If explosive work becomes necessary within the October to April time frame, a non-lethal "Fish Scare" charge will be detonated one minute prior to detonation of the underwater blast.

In the event that a sturgeon is killed during blasting, the NMFS and/or the USFWS will be notified immediately.

National Marine Fisheries Service  
Habitat Conservation Division  
Attention: Mark Thompson  
3500 Delwood Beach Road  
Panama City, Florida 32408  
850.234.2788

US Fish and Wildlife Service  
Attention: Mary Mittiga  
1601 Balboa Ave.  
Panama City, Florida 32405  
850.769.0552

7. Any dead sturgeon will be secured on site for carcass analysis by notified agency representative.
8. Following completion of the project, a report summarizing any involvement with sturgeon will be prepared for NMFS and/or USFWS.





## Appendix C — RFS Desktop Analysis



## **Reticulated Flatwoods Salamander (RFS) Analysis**

### **I. Introduction**

Wetlands that could potentially serve as habitat for the RFS were identified and assessed as a part of the PD&E and NEPA processes associated with the SR 87 Connector PD&E. The rationale for conducting this assessment was based on the presence of designated RFS Critical Habitat within the project alignment and conversations with the United States Fish and Wildlife Service (USFWS) staff, as discussed on pages 19 and 22 of this ESBAR. This desktop analysis summary is intended to discuss the methods and results of the desktop RFS habitat assessment conducted for the SR 87 PD&E.

Methods for assessing and scoring/grading potential RFS habitat have been previously established. HDR, Inc., in conjunction with the USFWS and the Florida Fish and Wildlife Conservation Commission (FFWCC) on behalf of the Florida Department of Transportation (FDOT), developed a method (“HDR Method”) that was utilized for the US Highway 98 widening project in 2001. The HDR Method is applicable for both the RFS and the frosted flatwoods salamander. As such, the HDR Method was followed in conducting a desktop review to identify potential RFS breeding ponds and necessary supporting habitat associated with the SR 87 Connector alternative corridors and alignments.

Typical RFS breeding sites comprise isolated, shallow depressions (“ponds”) and a relatively narrow ecotone (20-50 feet wide) dominated by herbaceous plants and scattered shrubs. Breeding ponds are characterized by short hydroperiods (ephemeral) and relatively open overstories (low tree and shrub densities) and midstories. Breeding ponds range in size and are associated with Rutlege, Pickney, Dorovan, Pamlico, or similar very poorly drained and poorly drained soil types (Federal Register, February 2009). Florida Land Use Cover and Forms Classification System (FLUCFCS) habitat types 621 (cypress), 630 (mixed forested wetland), 640 (vegetated non-forested wetland), and 641 (freshwater marsh) are identified as being utilized by breeding RFS. Cypress ponds tend to be associated with higher quality RFS habitats. Appropriate upland habitat (a relatively open pine canopy with native herbaceous species) that surrounds the breeding pond and an associated herbaceous species-dominated ecotone are also important to RFS life history needs. This desktop assessment was followed by initial, limited field evaluations/ verifications.

### **II. Methodology**

The desktop/GIS identification of potential RFS ponds initially focused on 1,500 feet wide buffers from the center line of the proposed alternative alignments. Additional datasets used in the desktop assessment included Santa Rosa County soils, Northwest Florida Water Management District land cover (2007), USFWS critical habitat data, USFWS National Wetlands Inventory (2010), and aerial photographs.

First, all very poorly drained (VPD) and poorly drained (PD) soils were selected from the soil mapping units that occurred in the alternative alignments and the 1,500 foot buffers (Figure 1).



After all the VPD and PD soils were selected, the VPD and PD polygons associated with the Blackwater River and Clear Creek were deleted from the data subset because riverine wetlands are not appropriate RFS habitat. The resulting GIS shapefile called “2\_Potential\_Soils\_Ponds.shp” represents all soil types that could potentially serve as RFS habitat within the alignments and the buffers. The resulting data layer contains five potential ponds. Figure 2 depicts the five potential ponds based on soils.

The potential ponds based on soils were further refined by comparing the areas where the VPD and PD soils intersected with the NWI wetland data. First the NWI data was clipped to the alignment buffers (Figure 3). Then all potential ponds based on soils that were also classified as wetlands according to NWI were grouped in a shapefile called “3\_Potential\_Soil\_Ponds\_NWI.shp” (see Figure 4). The resulting data layer contains six potential ponds.

FLUCFCS data was evaluated by selecting all FLUCFCS habitat types that correspond to potential RFS habitat, as described above (Figure 5). The FLUCFCS habitats associated with the Blackwater River and Clear Creek were removed from the resulting data layer because riverine wetlands are not appropriate RFS habitat. All remaining FLUCFCS habitat polygons were grouped into a shapefile called “1\_Potential\_FLUCCS\_Ponds.shp” (see Figure 6). The resulting data layer contains eight potential ponds.

To further refine the potential pond locations, the intersections between “3\_Potential\_Soils\_Pond\_NWI.shp” and “1\_Potential\_FLUCCS\_Ponds.shp” were assessed. The rationale is that potential ponds classified as wetlands by soil type, NWI, and FLUCFCS are more likely to provide appropriate RFS habitat. The resulting shapefile is called “4\_FLUCCSPond\_NWISoilsPonds\_Intersect.shp” (see Figure 7), which includes eight potential ponds that are scored and discussed in more detail below.



Figure 1. VPD & PD Soils Map

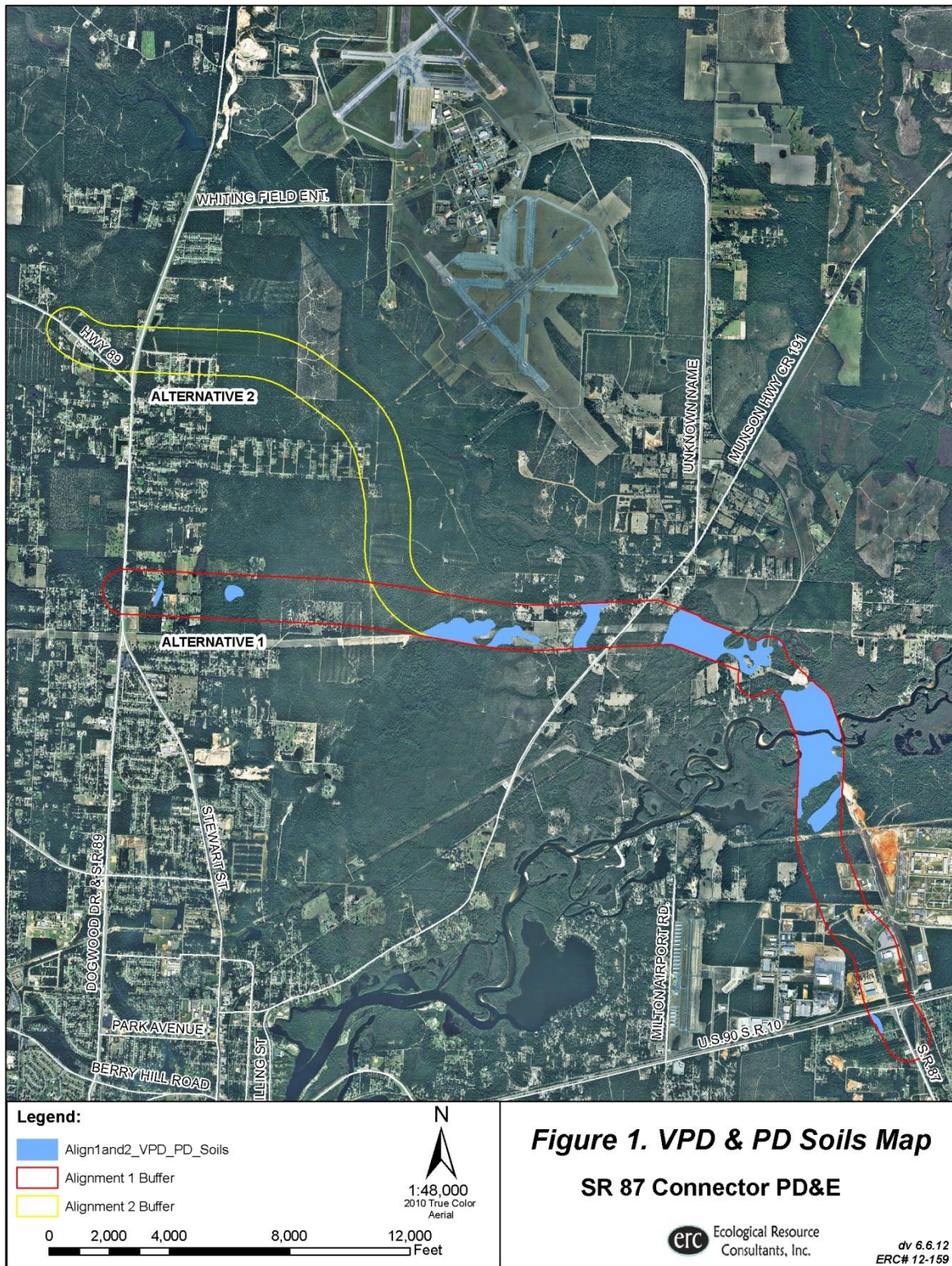




Figure 2. Potential Ponds Based on Soils

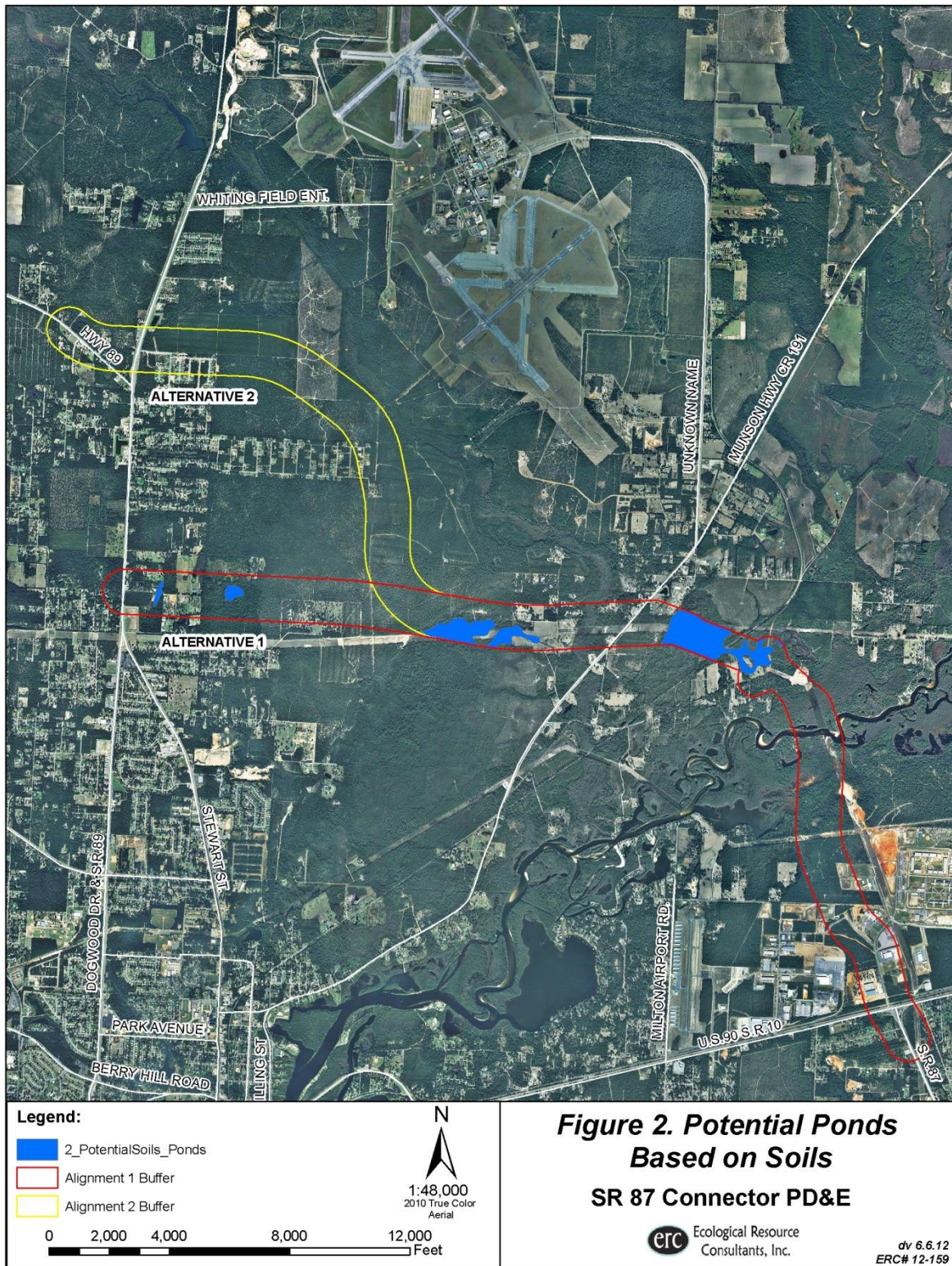




Figure 3. NWI Wetlands Map

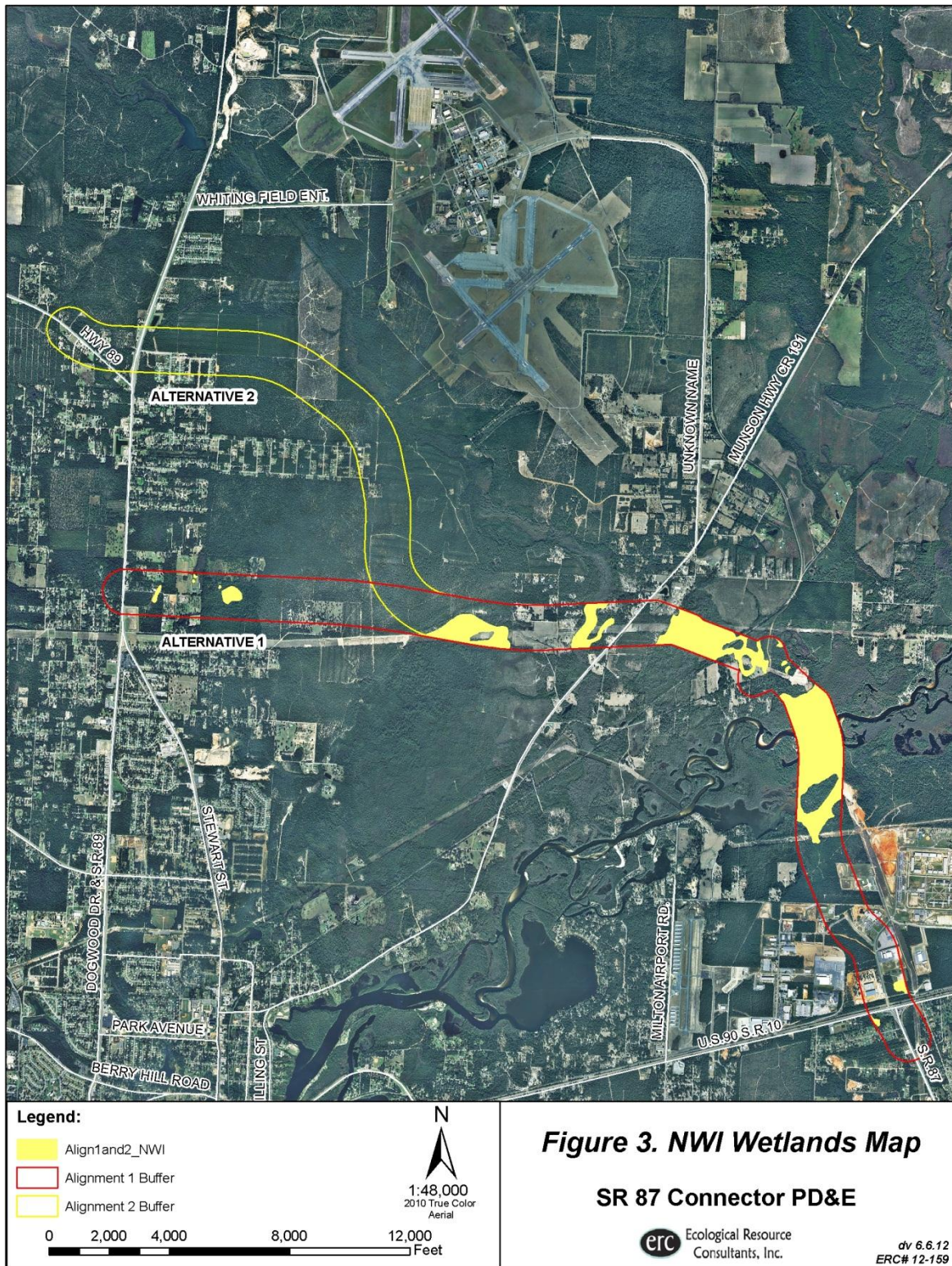




Figure 4. Potential Ponds Based on Soils & NWI

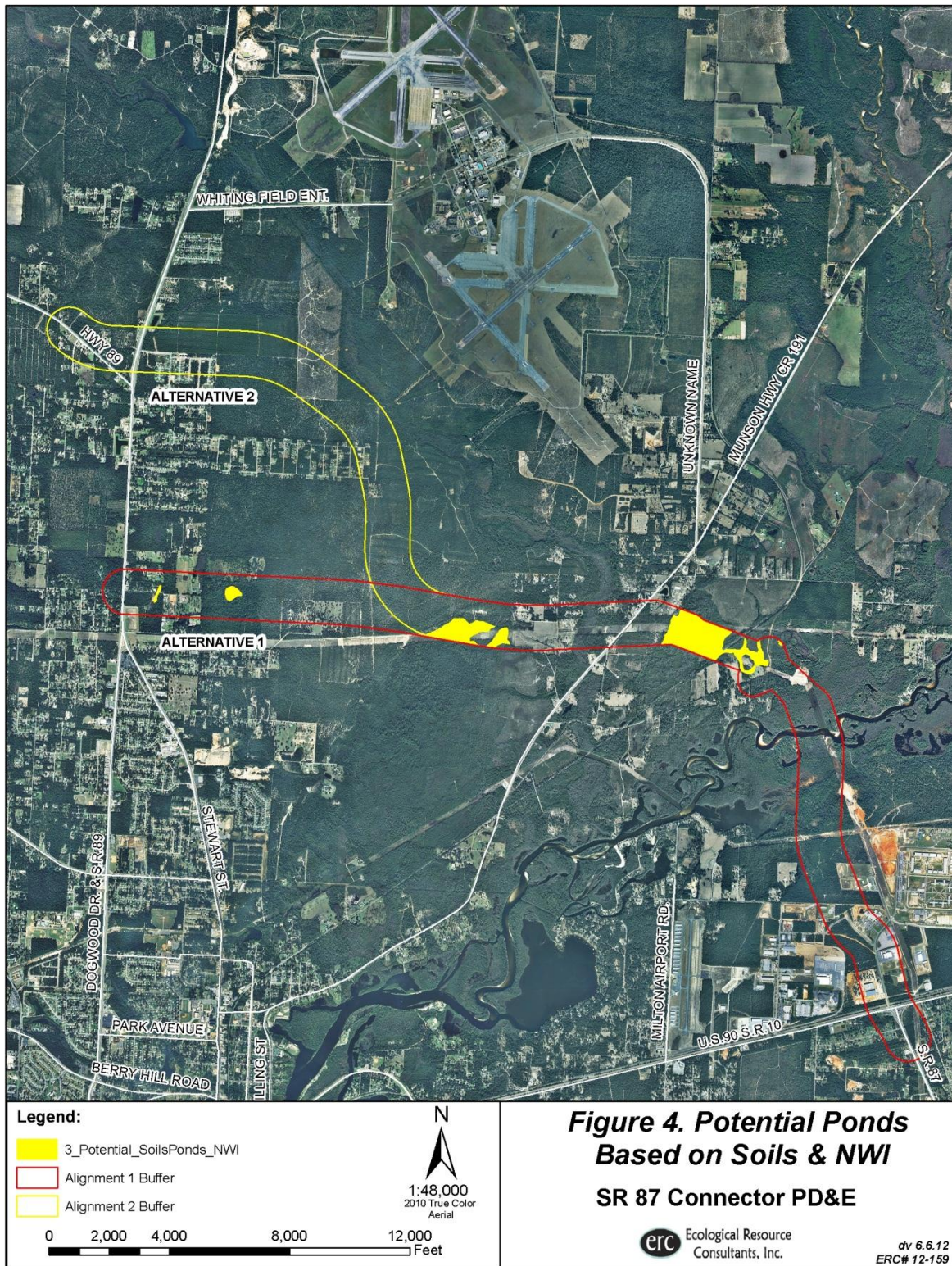




Figure 5. Wetland FLUCFCS Polygon Map

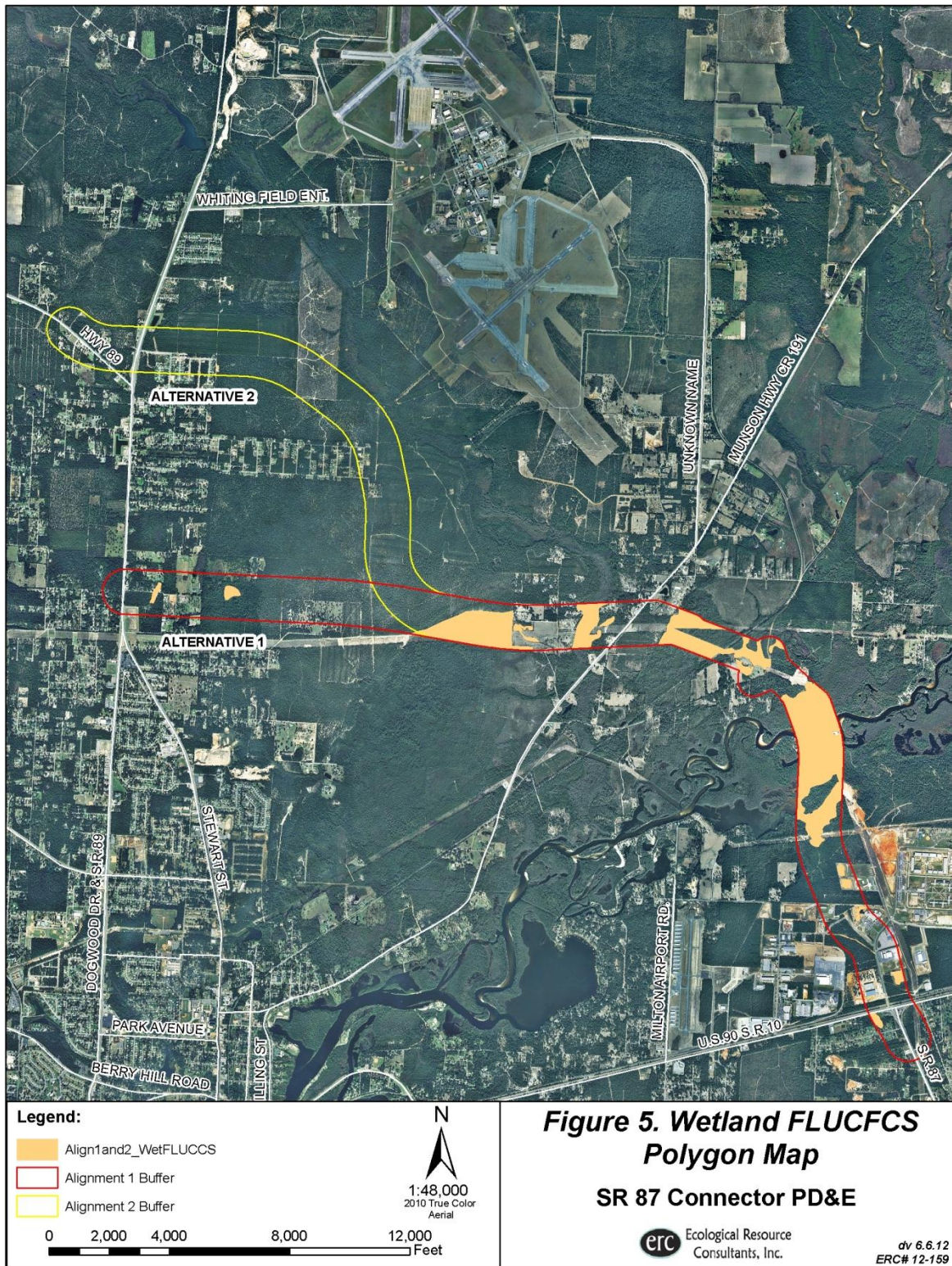




Figure 6. Potential Ponds Based on FLUCFCS

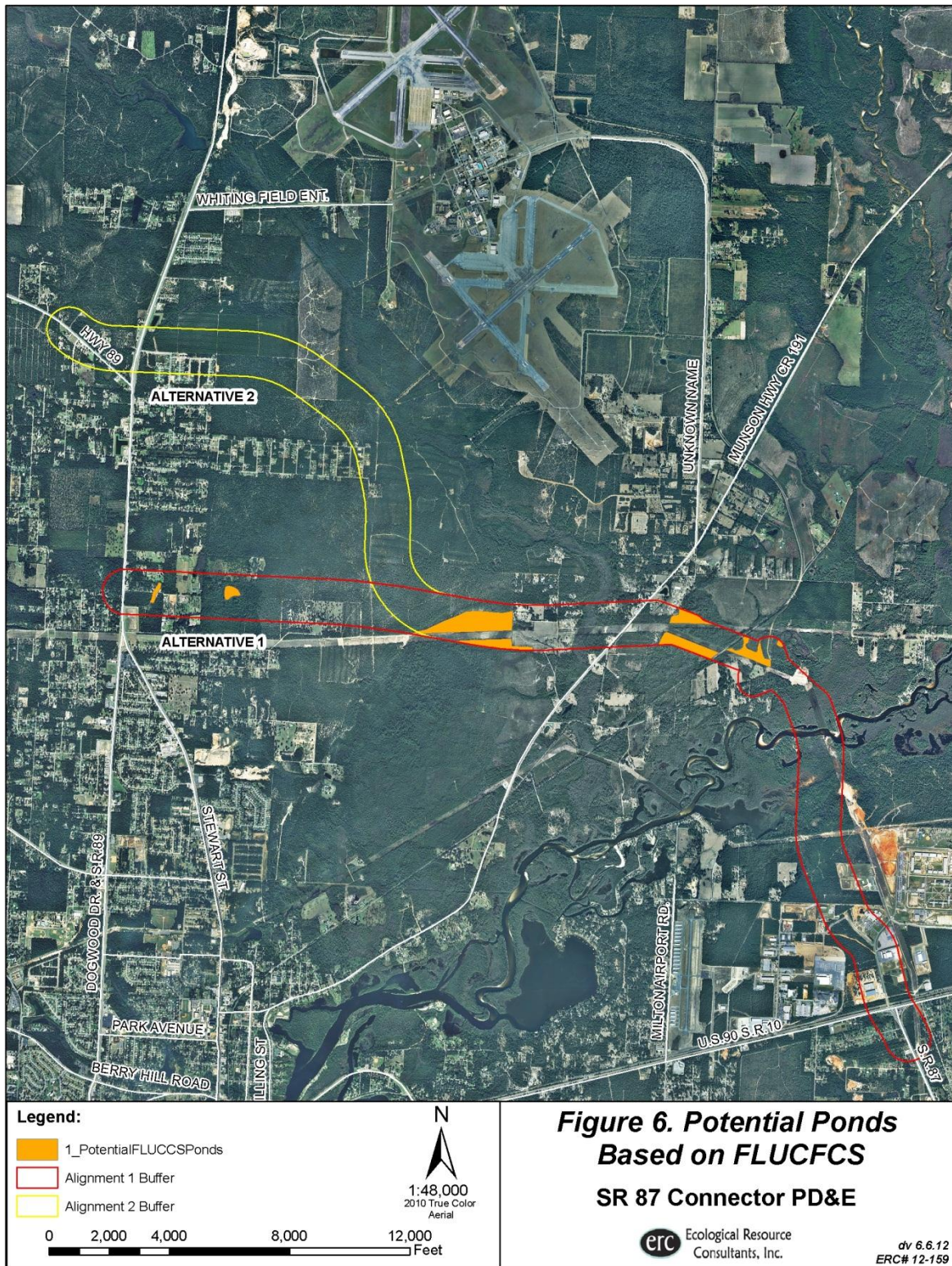
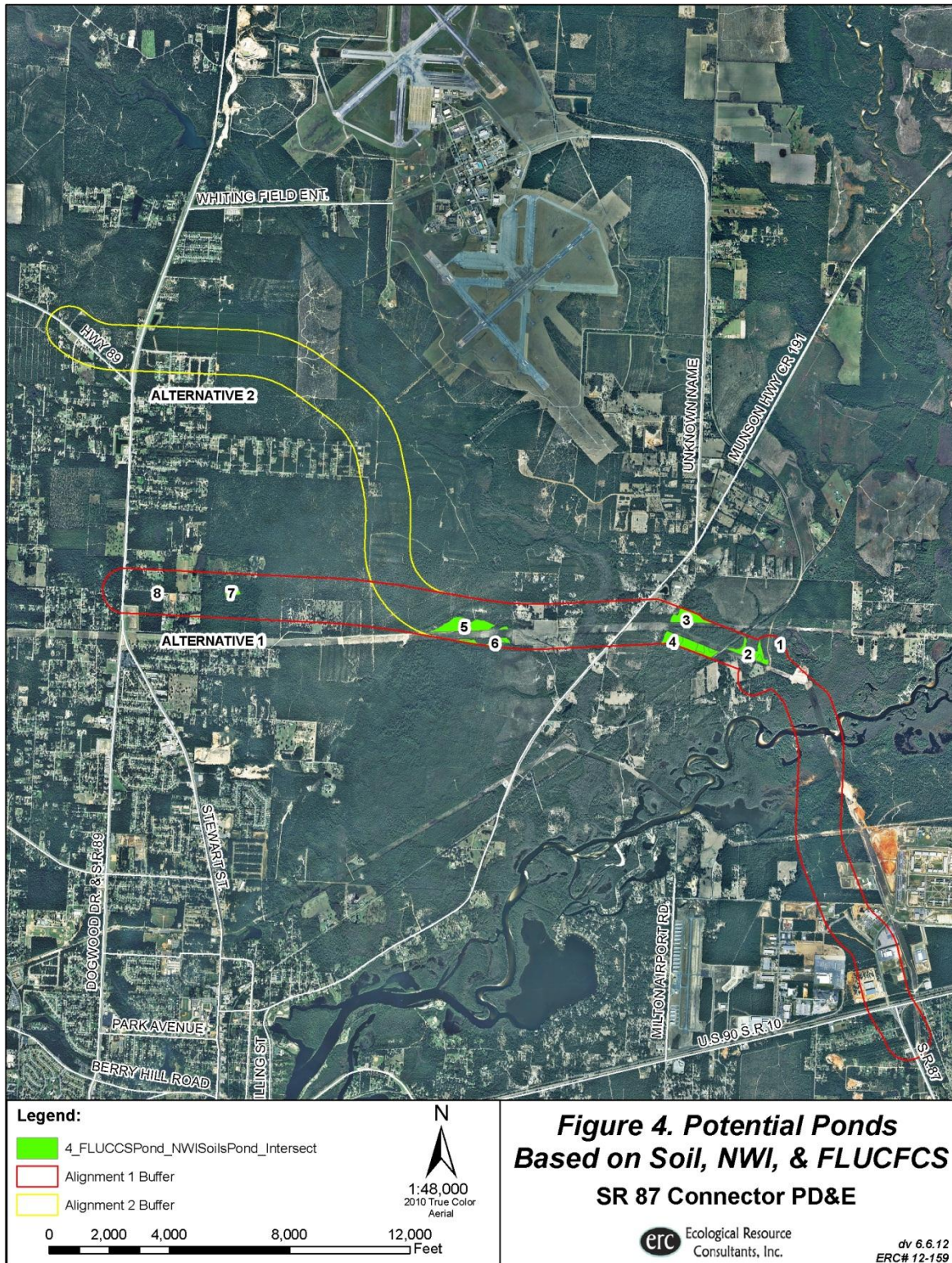




Figure 7. Potential Ponds Based on Soil, NWI, & FLUCFCS Intersect





### III. Results

The resulting data layer contains eight unique potential pond/wetland areas that are separated by natural features such as upland areas or manmade features such as powerline easements, roadways, and trails. Portions of these wetlands/ponds were field verified during the wetland delineations and species survey and resulted in the following scores, based on the HDR Method:

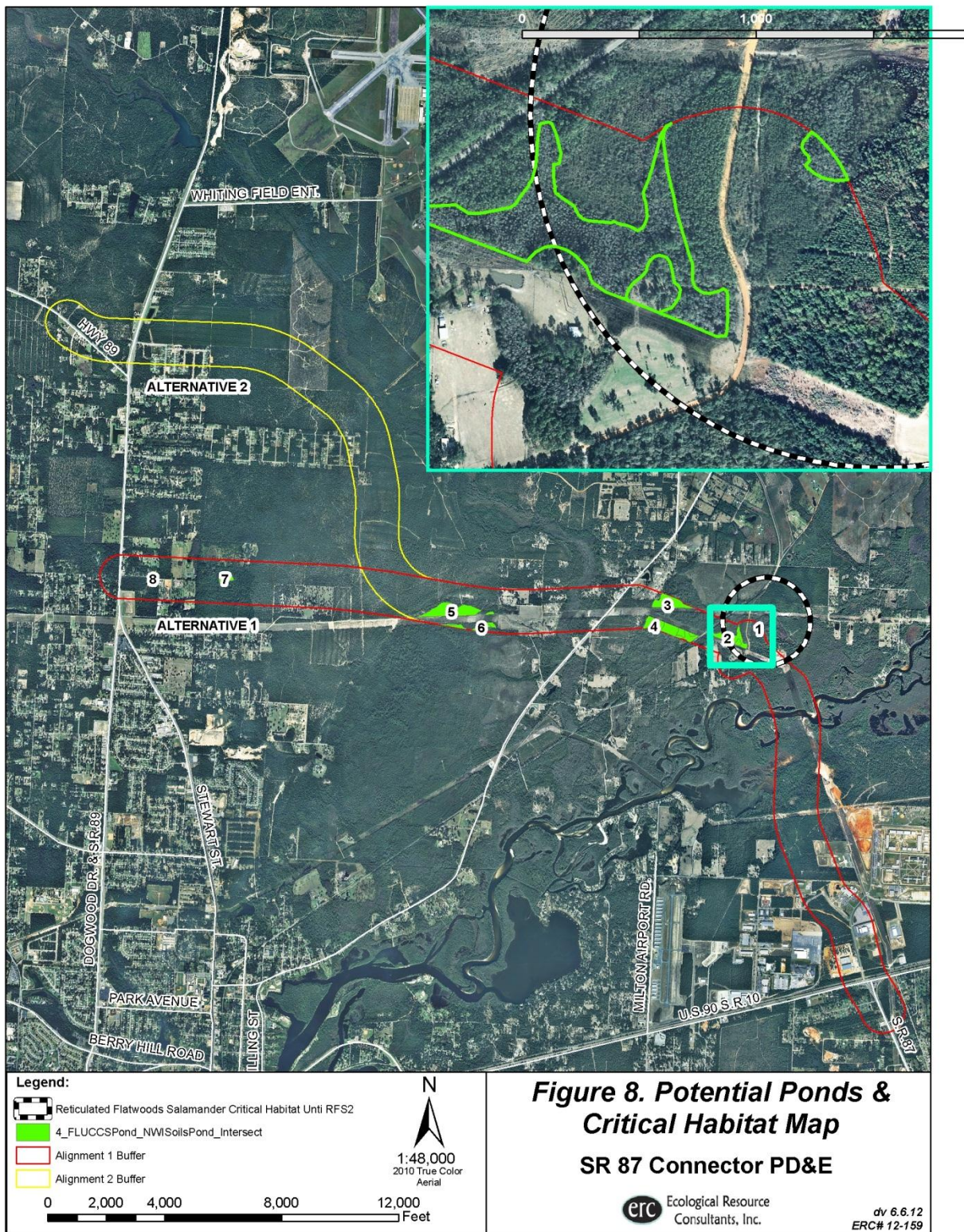
Table 1. Summary of Potential Pond Scores based on the HDR Method

Pond Number	Pond Score	Ecotone Score	Upland Score	Total Score	Quality
1	3	2	1	6	Moderate-High
2	2	1	1	4	Low-Moderate
3	1	0	0	1	Low
4	1	0	0	1	Low
5	1	0	0	1	Low
6	1	0	0	1	Low
7	1	0	0	1	Low
8	1	0	0	1	Low

Potential ponds 1 and 2 are located within the known RFS2 Critical Habitat Unit as depicted on Figure 8 (and on Figure 6 of this ESBAR). These potential ponds received the highest scores out of all the pond/wetland areas. Pond 1, which is located on the outermost edge of the 1,500 foot buffer and in the center of the critical habitat unit, is the highest scoring pond and the only pond that would likely support RFS due to appropriate habitat conditions. Potential ponds 3-8 scored low due to poor pond conditions related to poor water quality and inappropriate surrounding vegetation, overgrown ecotones, and poor quality uplands that were planted in pine and/or contained inappropriate habitat types (sandhills instead of mesic pine flatwoods). Photographs have been taken within or in the general vicinity of each potential pond/wetland and the photographs are presented below. Detailed evaluations of each potential pond will be conducted during more specific field surveys associated with potential USFWS consultation.



Figure 8. Potential Ponds and Critical Habitat Map





### **Pond 1**

Pond 1 looking east



Pond 1 looking west and ecotone in background



Pond 1 looking south



## **Pond 2**

Portion of Pond 2 looking west



Pond 2 ecotone looking north



Portion of Pond 2 looking west



Portion of Pond 2 looking south







### **Ponds 3 & 4**

Ecotone and Pond (in background)



Ecotone and Uplands





## **Ponds 5 & 6**

### **Pond Photos**



### **Ecotone / Upland Photos**



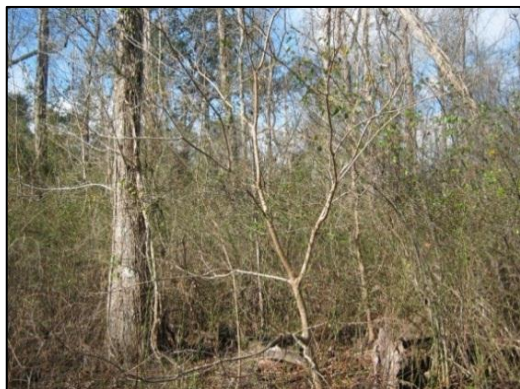


### **Pond 7**

Pond Photo looking north



Ecotone Photo looking west





## **Pond 8**

Pond Photo looking south



Ecotone photo looking south





**RFS Desktop Analysis Potential Pond Field Assessment Scoring Sheets**

## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 1 Site Location: T 2N R 27W S 19 Natural  
Community Type: dome swamp Soil: Pond/Ecotone Rutlege Loamy Sand Surrounding  
Land Pactolus Loamy Sand, Kalmia Loamy Fine Sand Size: Pond/Ecotone \_\_\_\_\_  
Site Rank: Moderate-High Distance//Direction from US 90 2.3 miles NW

### Pond

Overstory: Scattered slash pine and pond cypress

Midstory: *Ilex myrtifolia*, pond cypress, and *nyssa sylvatica*

Groundcover: open water, *Dicanthelium sp.*, *Rhynchospora inundata*, *Lichopodium*, *Sarracennia leucophylla*, *Dichromena*, *Oxypolis oxypidus*.

### Ecotone

Portion of the ecotone is a powerline easement with maintained groundcover and no canopy. The remainder of the ecotone is a fire suppressed wet prairie / seepage slope containing titi and *Ilex glabra* with planted slash pine canopy. The groundcover is comprised of *Rhynchospora sp.*, *Carex sp.*, *Rhexia sp.*, *Hypericum chapmanii*, and *Oxypolis sp.*

### Surrounding Upland

The uplands are planted Mesic Pine Flatwoods that grade up to higher sandhills. The canopy is dominated by slash pine, turkey oak, and laurel oak and the subcanopy is fire suppressed *Vaccinium elliottii* and *Ilex coriacea*

### Remarks:

### Habitat Score

Pond (P) 3 0-3

Ecotone (E) 2 0-3

Upland (U) 1 0-3

Metapopulation?    (\*)

TOTAL SCORE 6 0-9 (\*)

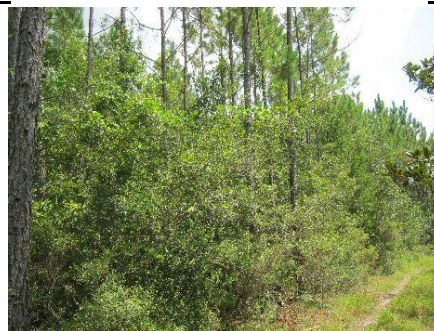
RANK Moderate-High



Pond



Ecotone



Upland

## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 2 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: dome swamp  
Soil: Pond/ECOTONE Rutlege Loamy Sand Surrounding Land Pactolus Loamy Sand, Kalmia Loamy Fine Sand  
Size: Pond/ECOTONE 8.4 acres Site Rank: Low - Moderate

### Pond

Overstory: Portions in the powerline have been cleared and have no canopy (30%), other portions are dominated by an open pond cypress and slash pine canopy (60%), and the remaining 10% is a moderately closed pond cypress and slash pine canopy.

Midstory: The majority of the pond area is open with scattered myrtle leaf holly (75%) and the remainder is dense myrtle leaf holly and gallberry (25%).

Groundcover: The southern portion of this pond has no vegetation in the groundcover and is comprised of open water for most of the year (30%), In areas with open canopy and sub-canopy there are scattered graminoids (60%), and the remainder of the pond area has only sparse groundcover due to dense over and mid story vegetation (10%).

### Ecotone

Approximately 30% of the ecotone has been disturbed by the powerline and pasture maintenance to the south. Where the ecotone is present, it is typically narrow, fire suppressed, and lacking dense herbaceous groundcover. There are narrow portions of intact ecotones that comprise approximately 10% of the total area and contain wiregrass, white-topped pitcher plant, panic grass, and longleaf threeawn.

### Surrounding Upland

Approximately 30% of the surrounding upland has been disturbed by powerline and pasture maintenance to the south. Approximately 40% of the uplands are planted in slash pine with dense, fire-suppressed understories and the remainder of the uplands are fire suppressed with dense canopy and shrub strata.

### Habitat Score

Pond (P) 2 0-3

Ecotone (E) 1 0-3

Upland (U) 1 0-3

Metapopulation?    (\*)

TOTAL SCORE 4 0-9 (\*)

RANK Low- Moderate



### Pond Photos





## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 3 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: Baygall  
Soil: Pond/ECOTONE Rutlege Loamy Sand Surrounding Land Pactolus Loamy Sand, Albany Loamy Sand  
Size: Pond/ECOTONE 8.74 acres w/in buffer Site Rank: Low

**Pond** – *This pond is part of a larger baygall wetland complex that drains south across the powerline and connects to pond 4. This wetland is not a closed depression typical of most flatwoods salamander ponds.*

Overstory: Sweet bay with scattered slash pine with approximately 85% -95% crown closure.

Midstory: Dense black titi and sweet bay

Groundcover: There is little groundcover and approximately 99% of the ground is comprised of bareground, water, and leaf litter. There is scattered chain fern on hummocks.

### **Ecotone**

The ecotone is comprised of a fire suppressed seepage slope with a canopy of slash pine and sweet bay and a subcanopy of sweet bay, slash pine, and scattered pond cypress. Shrub layer includes black titi, gallberry, large gallberry, and Elliot's blueberry with little groundcover due to the dense shrubs.

### **Surrounding Upland**

The surround uplands contain a slash pine canopy and a fire suppressed understory/shrub layer of black titi, gallberry, large galberry, wax myrtle, and Elliot's blueberry with scattered wiregrass in the groundcover.

### **Habitat Score**

Pond (P) 1 0-3

Ecotone (E) 0 0-3

Upland (U) 0 0-3

Metapopulation?    (\*)

TOTAL SCORE 1 0-9 (\*)

RANK Low



**Pond**



**Ecotone**



**Upland**

## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 4 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: Baygall  
Soil: Pond/ECOTONE Rutlege Loamy Sand Surrounding Land Pactolus Loamy Sand, Albany Loamy Sand  
Size: Pond/ECOTONE 13.8 acres w/in buffer Site Rank: Low

**Pond** – *This pond is part of a larger baygall wetland complex that drains south and connects to pond 3. This wetland is not a closed depression typical of most flatwoods salamander ponds.*

Overstory: Sweet bay with scattered slash pine with approximately 85% -95% crown closure.

Midstory: Dense black titi, sweet bay, wax myrtle, red maple, fetterbush, and sweetspar.

Groundcover: There is little groundcover due to the flow regime through this wetland. The majority of groundcover species are growing on hummocks and include netted chain fern, sphagnum moss, and cinnamon fern and approximately 65%-70% of the groundcover is bareground and water. There is evidence of flow such as secondary flow channeling and rafted leaves and debris throughout the wetland/pond.

### **Ecotone**

The ecotone is comprised of a fire suppressed seepage slope with a canopy of slash pine and sweet bay and a subcanopy of sweet bay, slash pine, and scattered pond cypress. Shrub layer includes black titi, gallberry, large gallberry, sweet pepperbush, and Elliot's blueberry with little groundcover due to the dense shrubs.

### **Surrounding Upland**

The surrounding uplands contain a slash pine, laurel oak, and water oak canopy and a fire suppressed understory/shrub layer of yaupon holly, gallberry, large galberry, wax myrtle, high bush blueberry and Elliot's blueberry with scattered wiregrass, deer moss, broom sedge in the groundcover.

### **Habitat Score**

Pond (P) 1 0-3

Ecotone (E) 0 0-3

Upland (U) 0 0-3

Metapopulation?    (\*)

TOTAL SCORE 3 0-9 (\*)

RANK Low



**Pond**



**Ecotone**



**Upland**

## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 5 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: Baygall  
Soil: Pond/ECOTONE Rutlege Loamy Sand Surrounding Land Pactolus Loamy Sand, Lakeland Sand  
Size: Pond/ECOTONE 15.16 acres Site Rank: Low

**Pond** – This pond is part of a larger baygall wetland complex that drains south across the powerline easement and connects to pond 6. This wetland is not a closed depression typical of most flatwoods salamander ponds.

Overstory: 40% crown closure with pond cypress, black gum, sweet bay, and slash pine.

Midstory: Dense woody growth including black gum, cypress, fetterbush, large gallberry, black titi, and possumhaw.

Groundcover: The groundcover had a significant amount of standing/flowing water (flowing south) and included beaksedge (*Rhynshospora inundata*), sphagnum moss, and netted chain fern growing on hummocks created by the trees and shrubs.

### **Ecotone**

The ecotone is comprised of a fire suppressed bog that grades up to a seepage slope with a canopy of planted slash pine and scattered sweet bay and pond cypress. The shrub strata includes black titi and large gallberry and there is no groundcover due to the dense canopy, sub canopy, and shrub strata

### **Surrounding Upland**

The uplands are comprised of a slash pine, laurel oak, and water oak canopy and poritons of the uplands (60%) are planted with slash pine. The sub-canopy is dominated by slash pine and the shrub layer is dominated by gallberry, large gallberry, and wax myrtle. Where groundcover is present, it is dominated by broomsedge, sunflower (*Helianthus sp.*), yellow jessamine, and wiregrass.

### **Habitat Score**

Pond (P) 1 0-3

Ecotone (E) 0 0-3

Upland (U) 0 0-3

Metapopulation?    (\*)

TOTAL SCORE 1 0-9 (\*)

RANK Low



**Pond**



**Ecotone**



**Upland**



## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 6 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: Baygall  
Soil: Pond/ECOTONE Rutlege Loamy Sand Surrounding Land Dorovan-Pamlico Assoc., Rains Fine Sandy Loam, Lakeland Sand Size: Pond/ECOTONE 4.91 acres w/in buffer Site Rank: Low

**Pond** – *This pond is part of a larger baygall wetland complex that drains south towards Clear Creek. This wetland is not a closed depression typical of most flatwoods salamander ponds.*

Overstory: 70%-80% crown closure with pond cypress, black gum, sweet bay, and slash pine.

Midstory: Dense woody growth including black gum, cypress, fetterbush, large gallberry, and black titi.

Groundcover: The groundcover has a significant amount of standing/flowing water (flowing south), bareground, and leaf litter. There are scattered netted chain fern growing on hummocks. There is evidence of flow within the wetland including secondary flow channels and rafted debris.

### **Ecotone**

The ecotone is comprised of a fire suppressed bog that grades up to a seepage slope with a canopy of slash pine and scattered sweet bay and pond cypress. The shrub strata includes black titi and large gallberry and there is no groundcover due to the dense canopy, sub canopy, and shrub strata. This ecotone is less fire suppressed than the ecotone surrounding pond 5 and has a more diverse groundcover including white topped pitcher plants, club moss, beaksedge, yellow-eye grass, red root, and wiregrass.

### **Surrounding Upland**

A portion of the upland is comprised of pasture and the remainder is planted in slash pine. The shrub layer is fire suppressed and dominated by gallberry, large gallberry, and wax myrtle.

### **Habitat Score**

Pond (P) 1 0-3

Ecotone (E) 2 0-3

Upland (U) 0 0-3

Metapopulation?    (\*)

TOTAL SCORE 3 0-9 (\*)

RANK Low



**Pond & Flow Channel**



**Ecotone**



**Upland**

## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 7 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: Basin Swamp  
Soil: Pond/ECOTONE Rains Fine Sandy Loam Surrounding Land Troup Loamy Sand, Dothan Fine Sandy Loam, Bonifay Loamy Sand Size: Pond/ECOTONE 3.43 acres Site Rank: Low

### Pond –

Overstory: The canopy is dominated by pond cypress and black gum.

Midstory: The midstory is dominated by black gum and myrtle leaf holly; however, it is relatively open.

Groundcover: There is little to no groundcover and it appears that the hydrology has been altered due to fire suppressed vegetation and pine plantation.

### Ecotone

The ecotone is comprised of a seepage slope with a slash pine and pond cypress canopy with a dense, fire suppressed understory and shrub strata including black titi, sweet pepperbush, gallberry, and large gallberry.

### Surrounding Upland

The surrounding uplands are comprised of sandhills that are planted with slash pine and sand pine.

### Habitat Score

Pond (P) 2 0-3  
Ecotone (E) 1 0-3  
Upland (U) 0 0-3  
Metapopulation? (\*)  
TOTAL SCORE 3 0-9 (\*)  
RANK Low



Pond



Ecotone

## Flatwoods Salamander Habitat Description and Evaluation Form

Project: SR 87 Connector Quad: Harold SW Qtr: NW  
Site Field ID # Pond 8 Photo \_\_\_\_\_  
Site Location: T 2N R 27W S 19 Natural Community Type: Ditched wetland  
Soil: Pond/ECOTONE Rains Fine Sandy Loam Surrounding Land Troup Loamy Sand, Dothan Fine Sandy Loam, Bonifay Loamy Sand Size: Pond/ECOTONE 3.43 acres Site Rank: Low

### Pond –

This wetland has been cleared and degraded overtime and is currently dredged out, ditched, and is connected across a road by a culvert. There is no vegetation present and the water quality appears to be poor from adjacent dirt road runoff.

### Ecotone

The ecotone is a fire suppressed wet prairie / seepage slope wetland.

### Surrounding Upland

The surrounding uplands include residential development and planted pine.

### Habitat Score

Pond (P) 0 0-3  
Ecotone (E) 0 0-3  
Upland (U) 0 0-3  
Metapopulation?    (\*)  
TOTAL SCORE 0 0-9 (\*)  
RANK Low



Pond

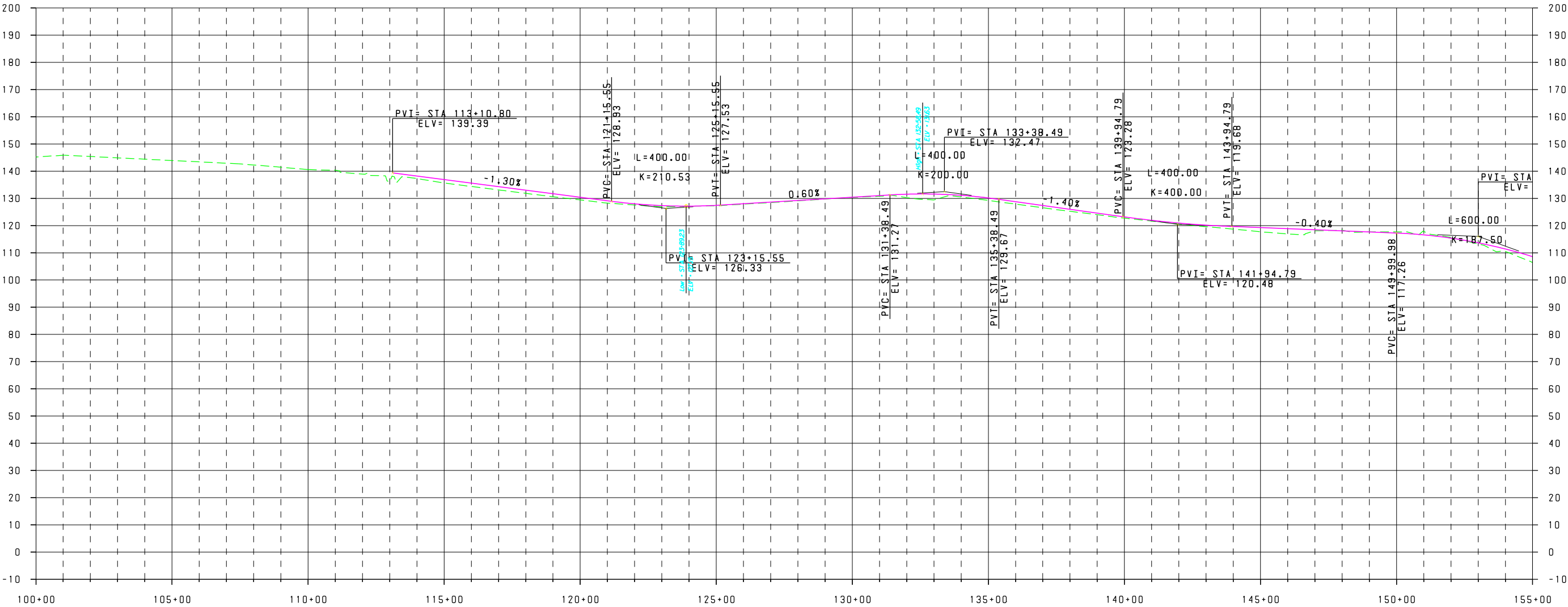


Ecotone



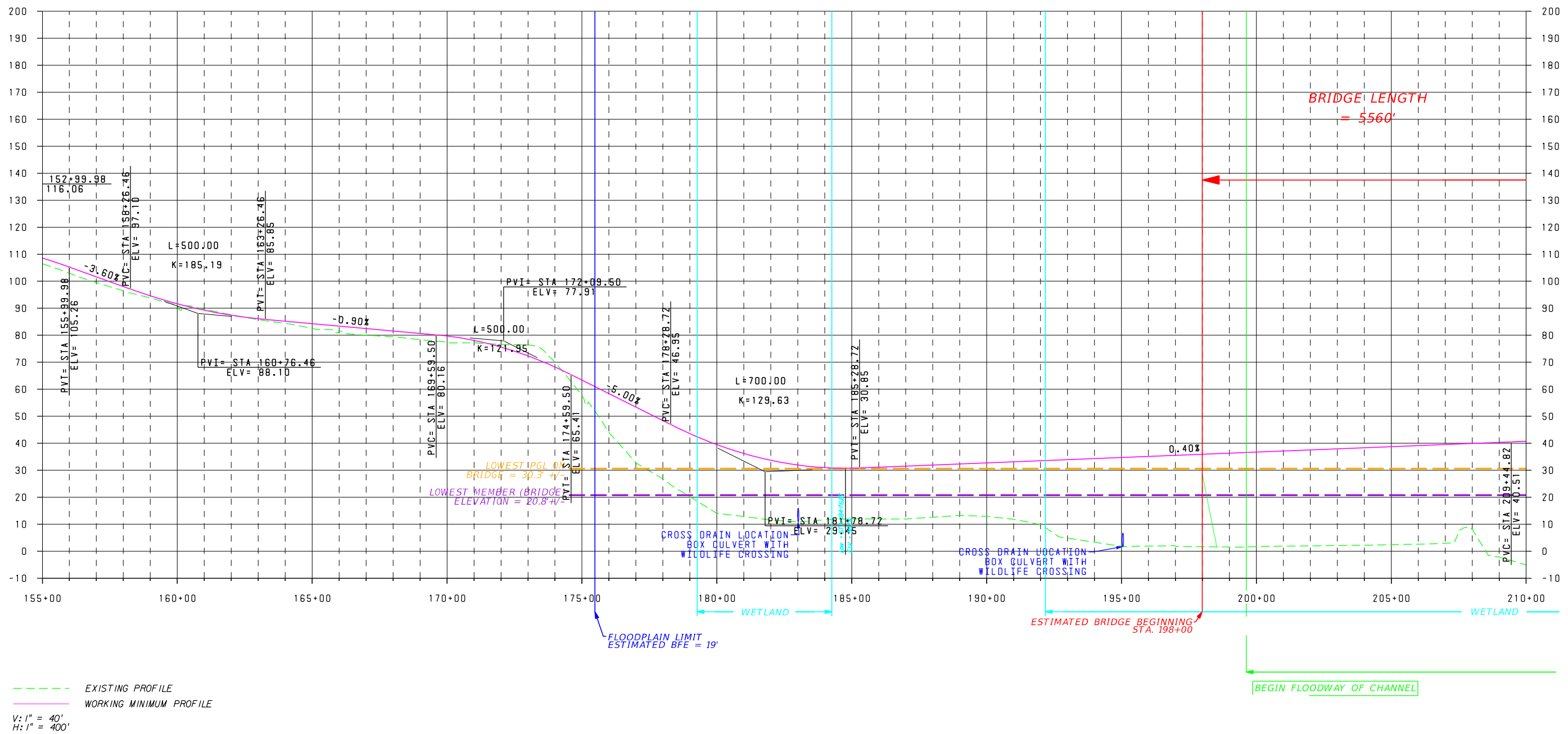


## **Appendix D — Profile Set and Preliminary Project Layout for the Blackwater River Floodway Bridge**



--- EXISTING PROFILE  
— WORKING MINIMUM PROFILE  
V: 1" = 40'  
H: 1" = 400'

REVISIONS				<div></div> <div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div> <div>● ENGINEERS ● PLANNERS ● SURVEYORS</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 1	SHEET NO.
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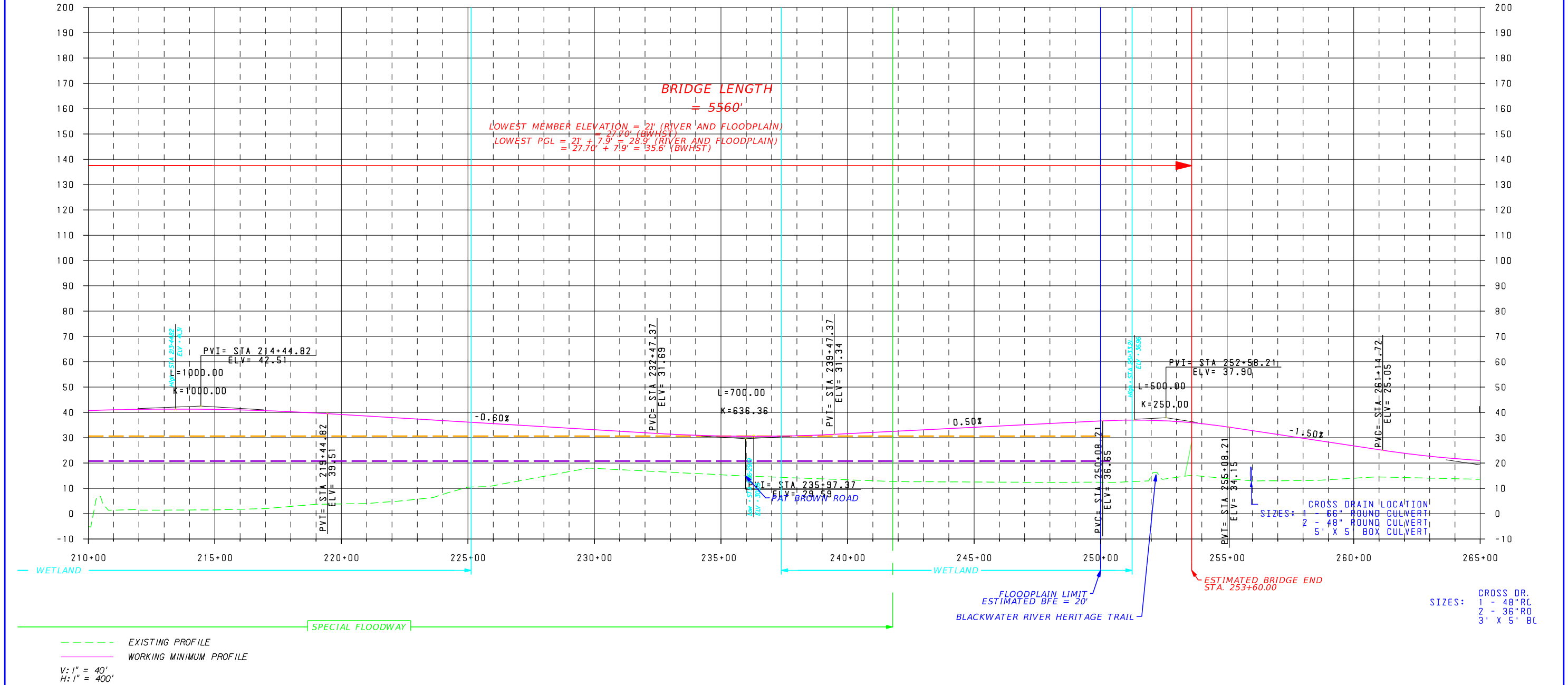


REVISIONS				 <div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 1	SHEET NO.  42
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● PLANNERS  
● SURVEYORS

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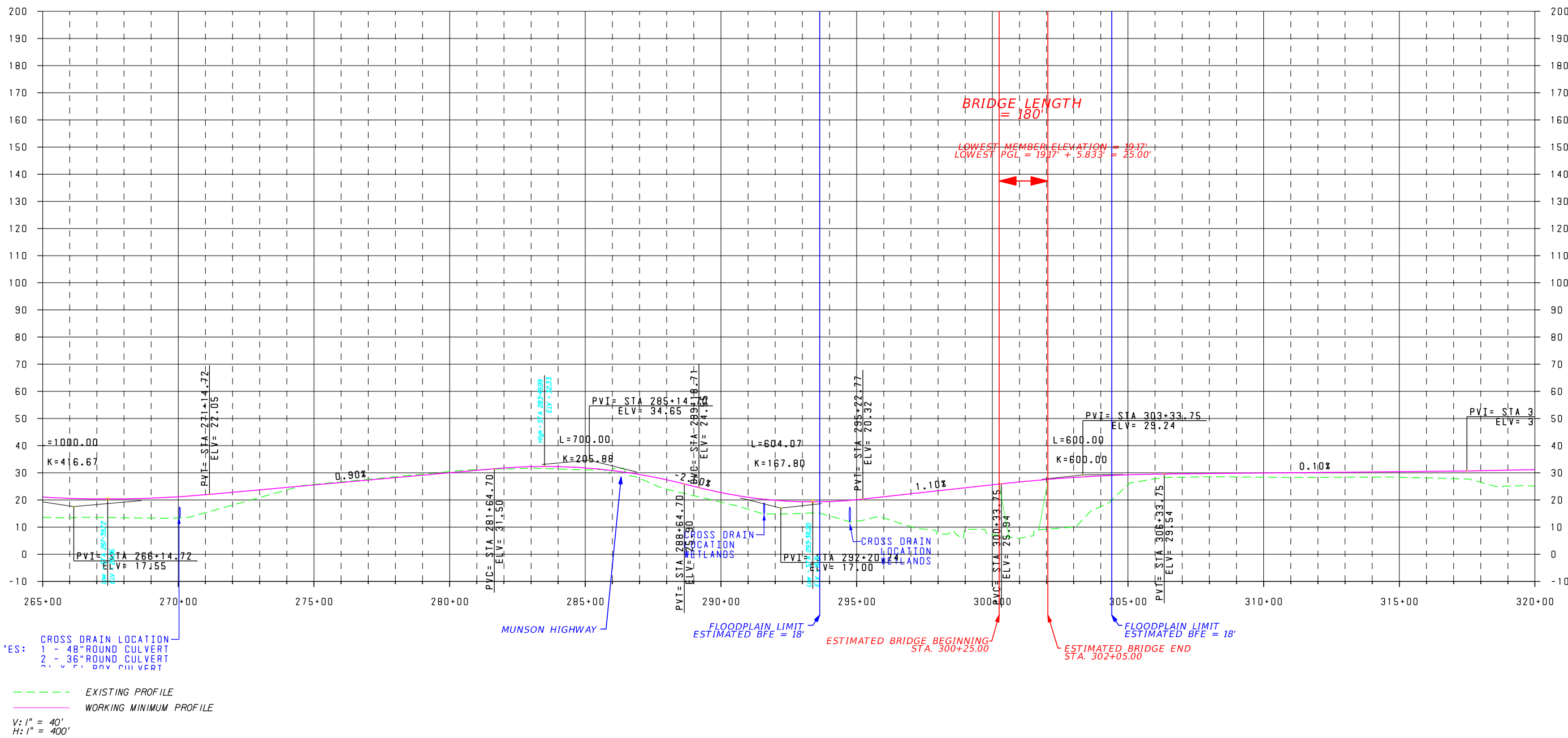
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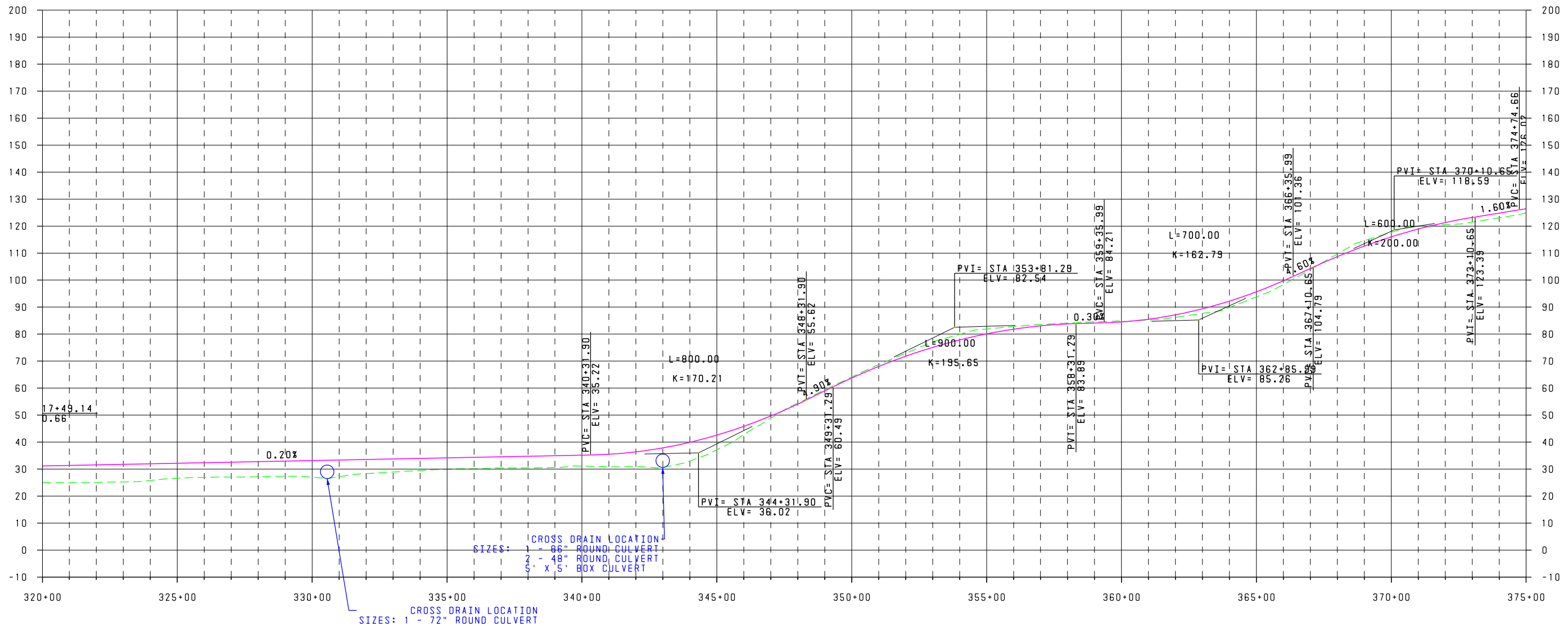
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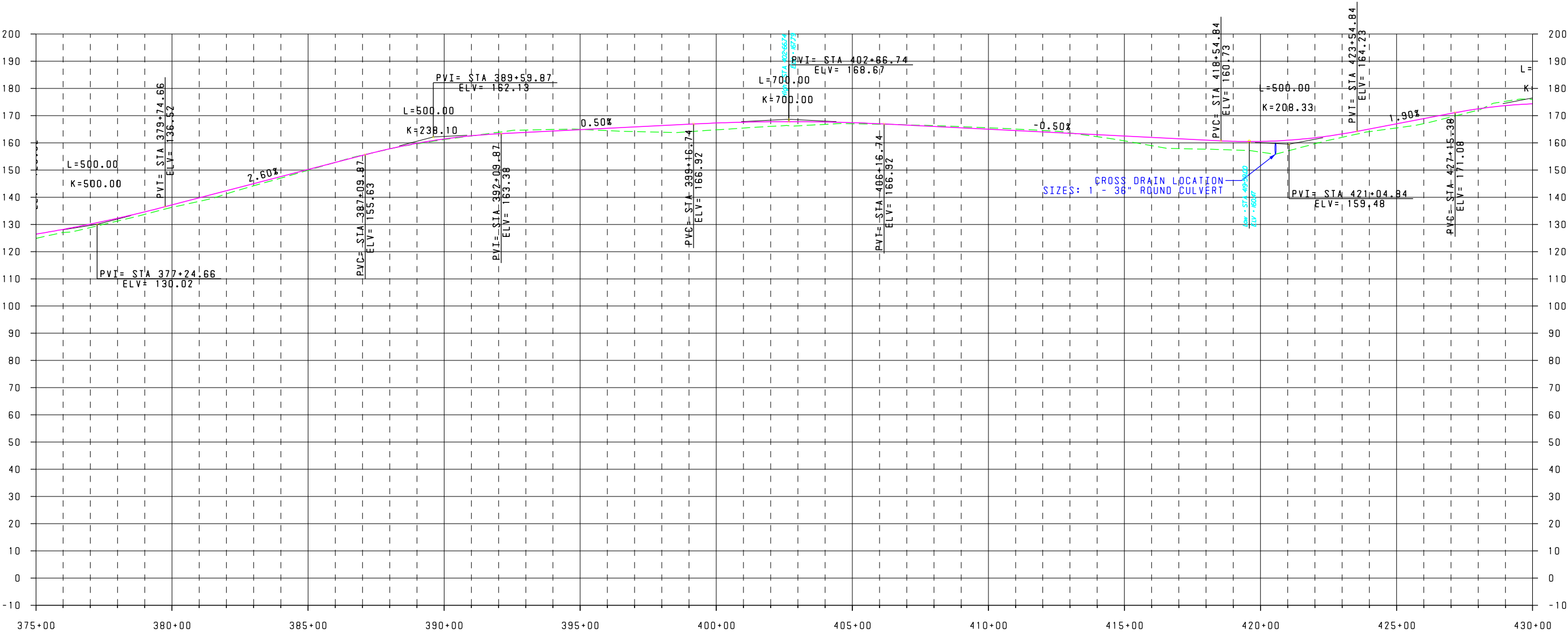
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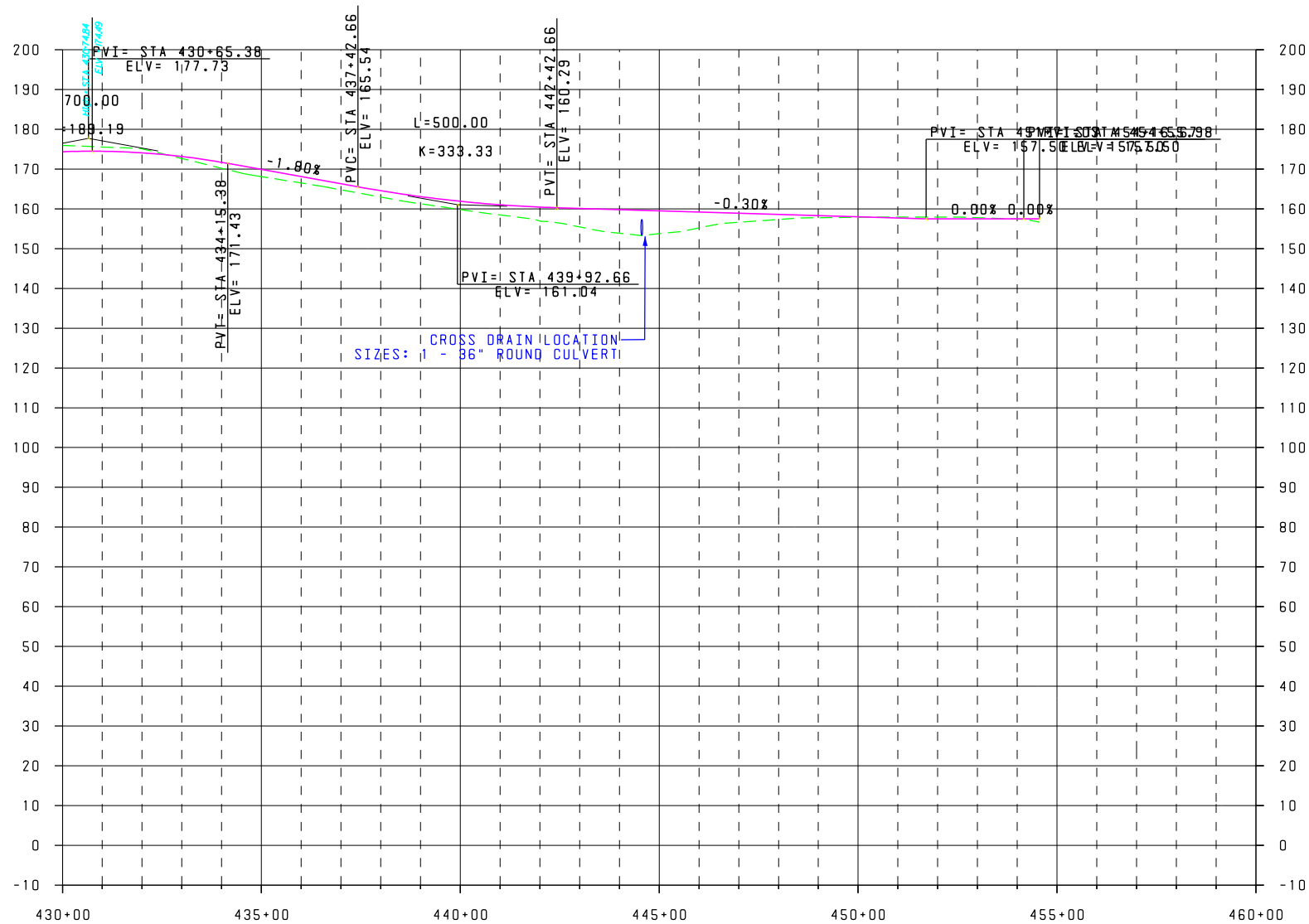
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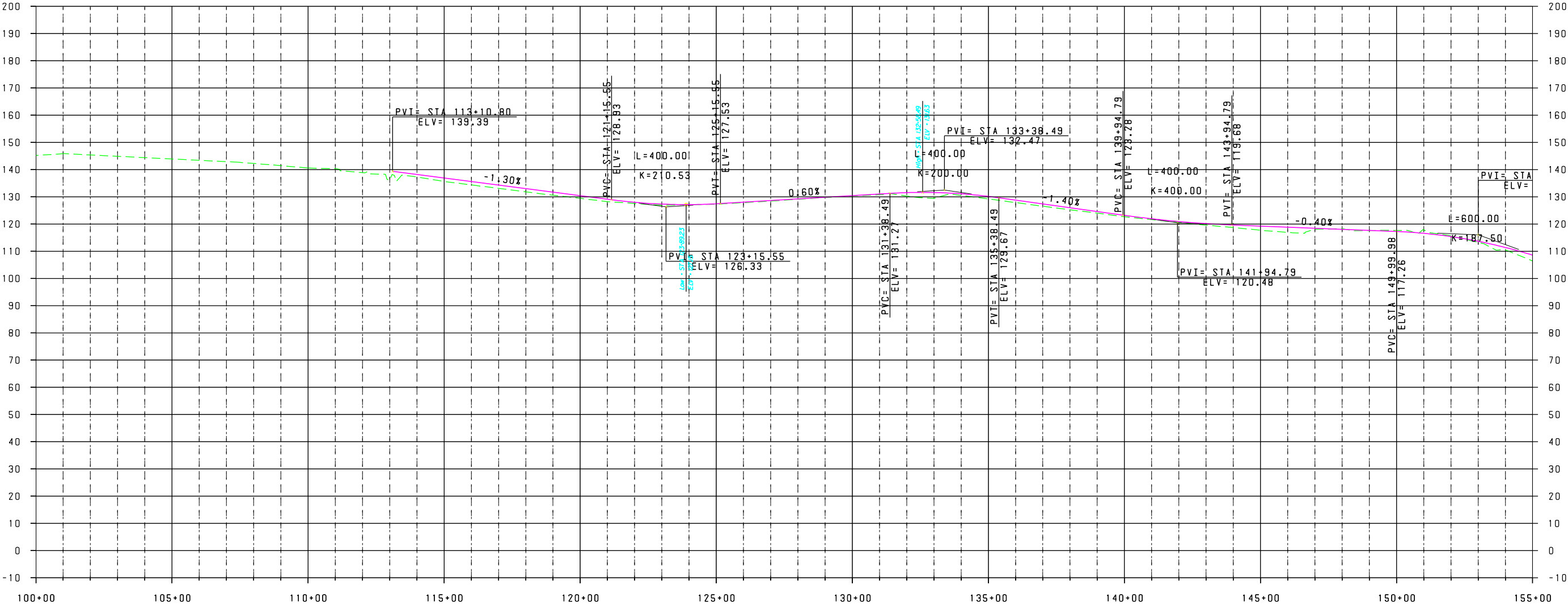
--- EXISTING PROFILE  
— WORKING MINIMUM PROFILE  
V: 1" = 40'  
H: 1" = 400'

REVISIONS				<div><div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div></div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 1	SHEET NO.  46
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— WORKING MINIMUM PROFILE  
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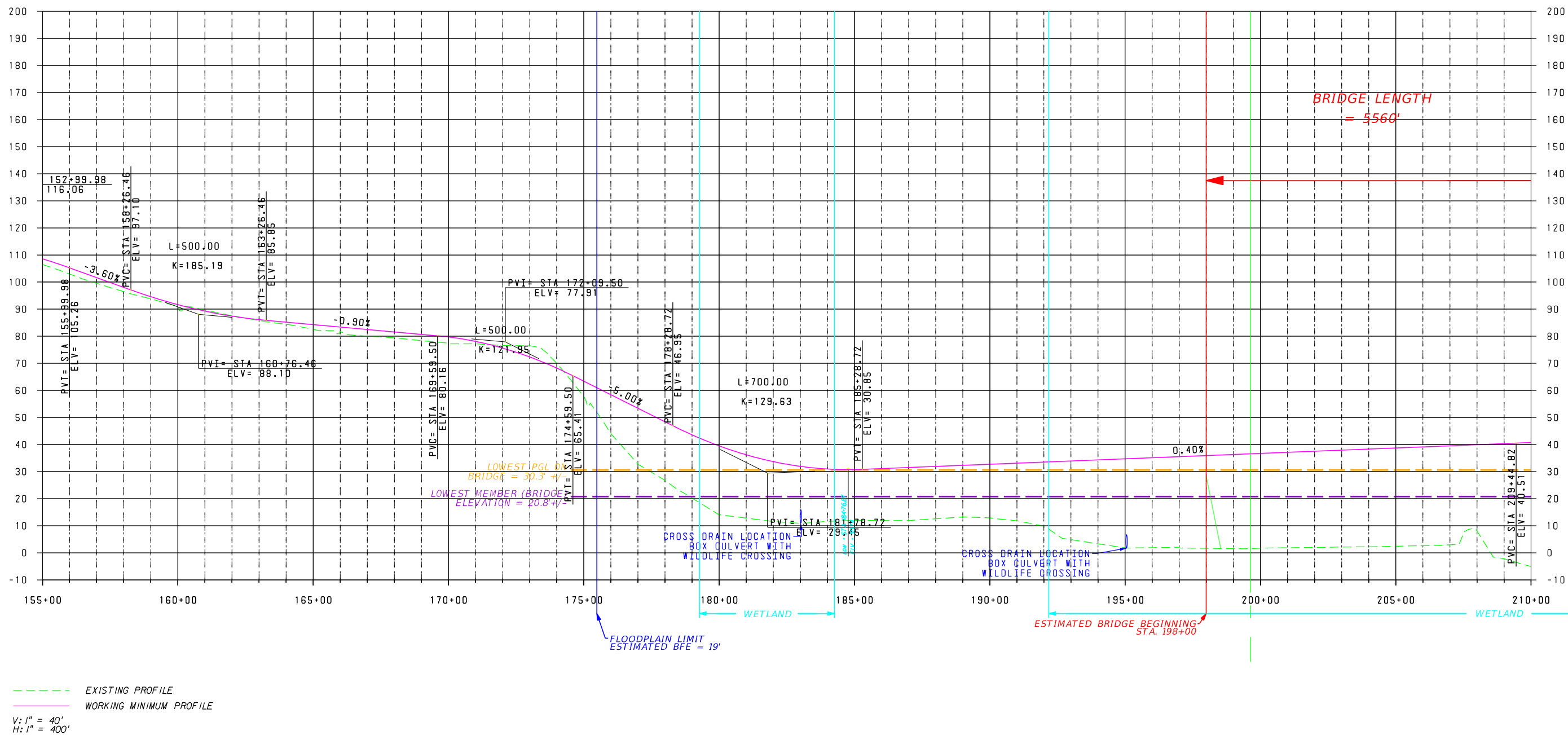
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DATE	DESCRIPTION	DATE	DESCRIPTION						
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--- EXISTING PROFILE  
— WORKING MINIMUM PROFILE  
V: 1" = 40'  
H: 1" = 400'

REVISIONS				<div></div> <div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div> <div>● ENGINEERS ● PLANNERS ● SURVEYORS</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 2	SHEET NO.
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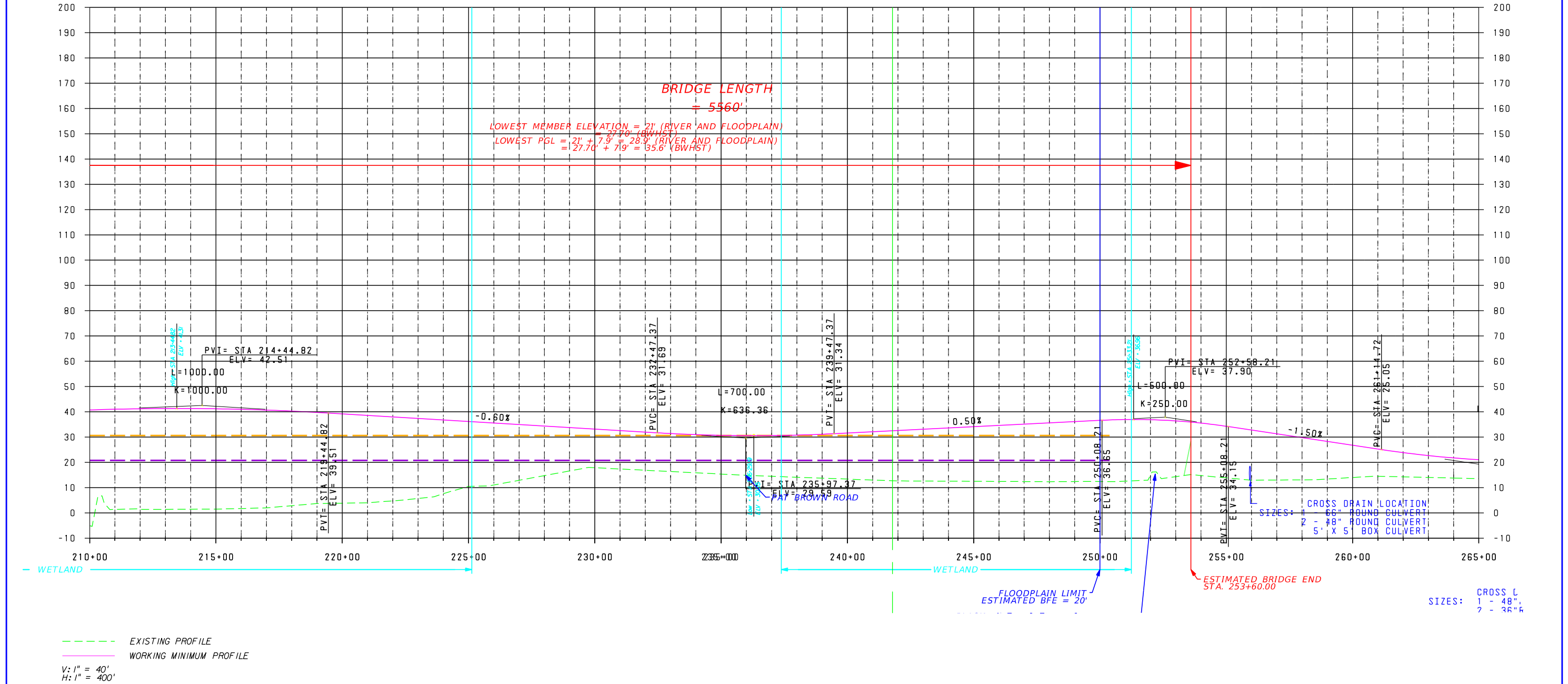





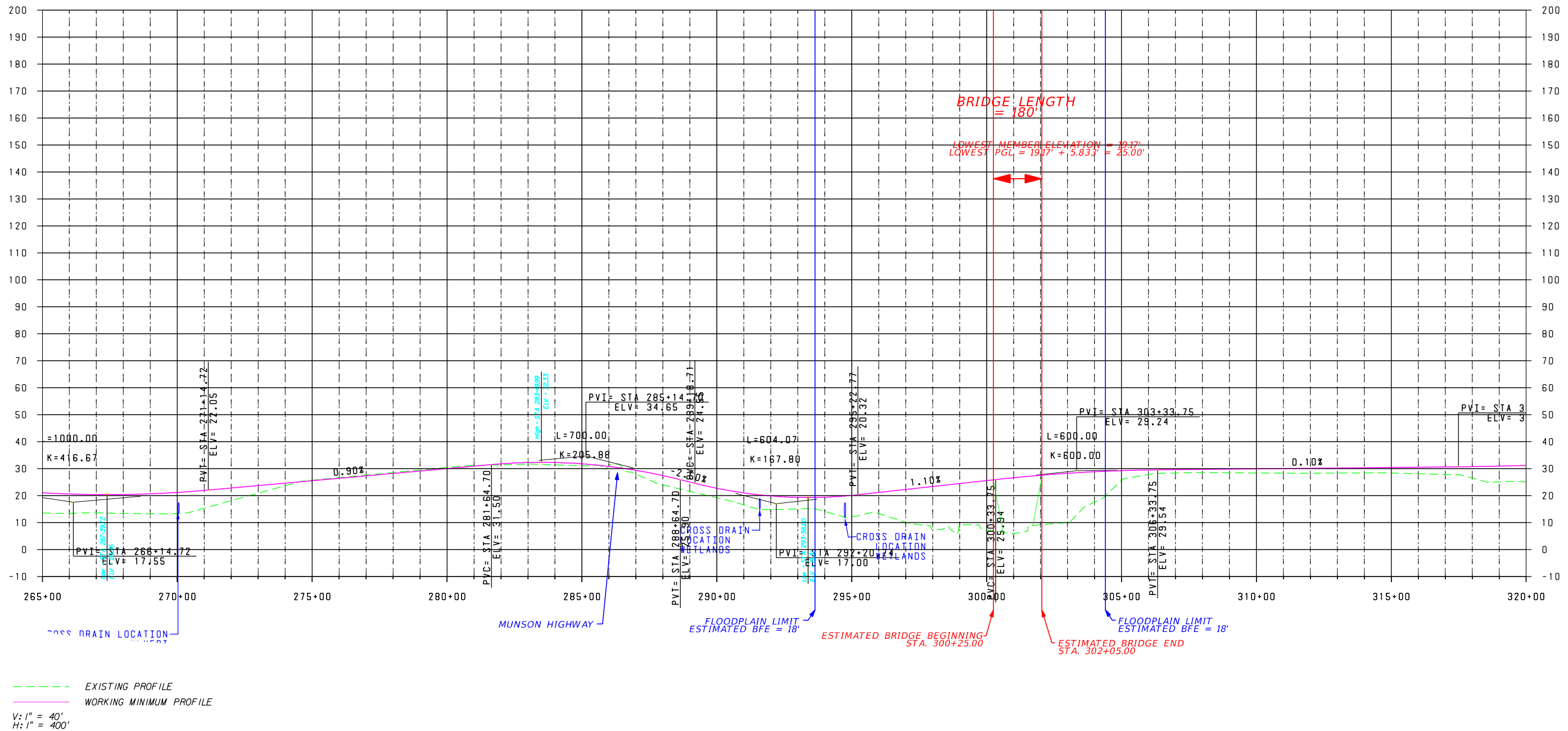
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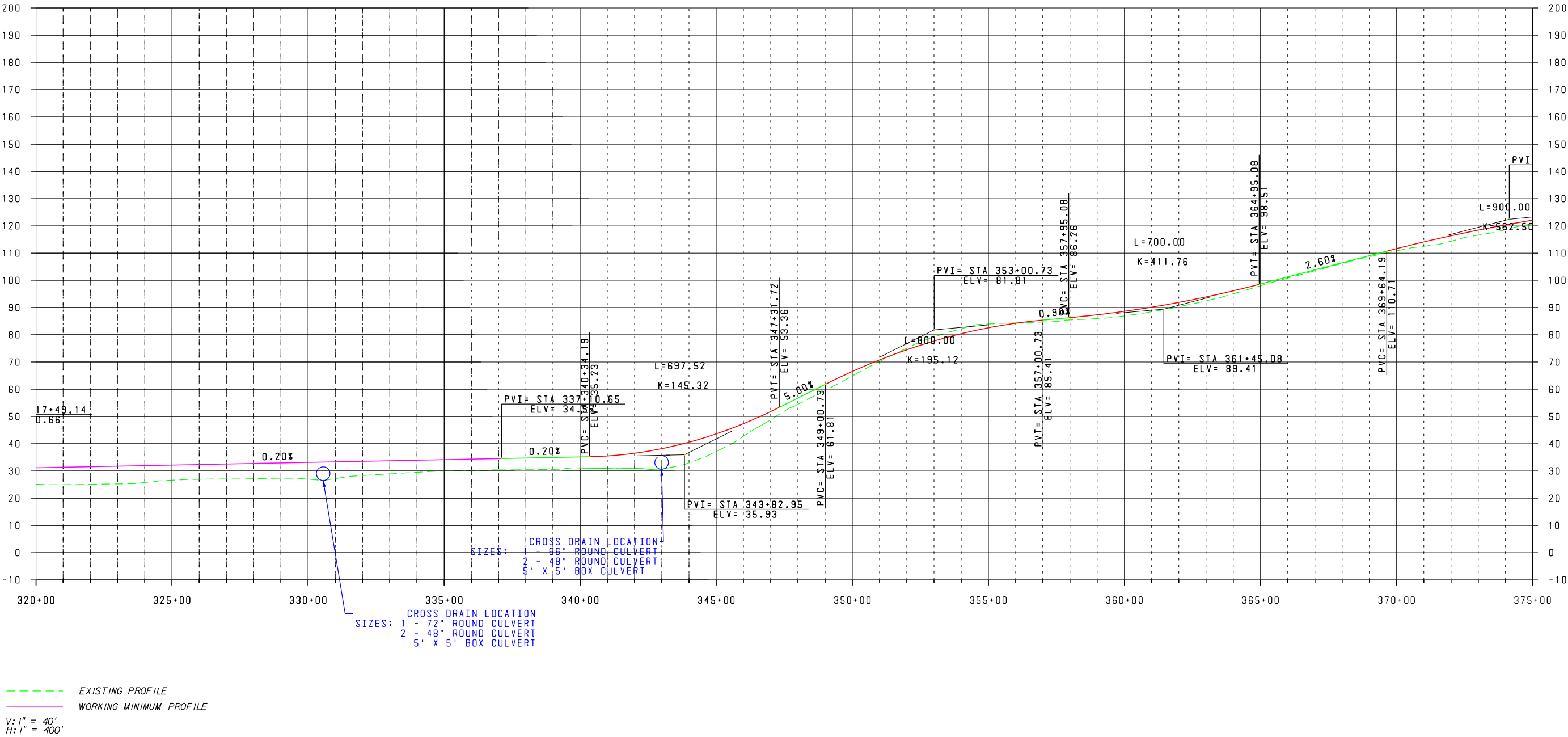


REVISIONS				<div><div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div></div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 2	SHEET NO. 48
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 87	SANTA ROSA	416748-3-22-01, ETC.		



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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 87	SANTA ROSA	416748-3-22-01, ETC.		





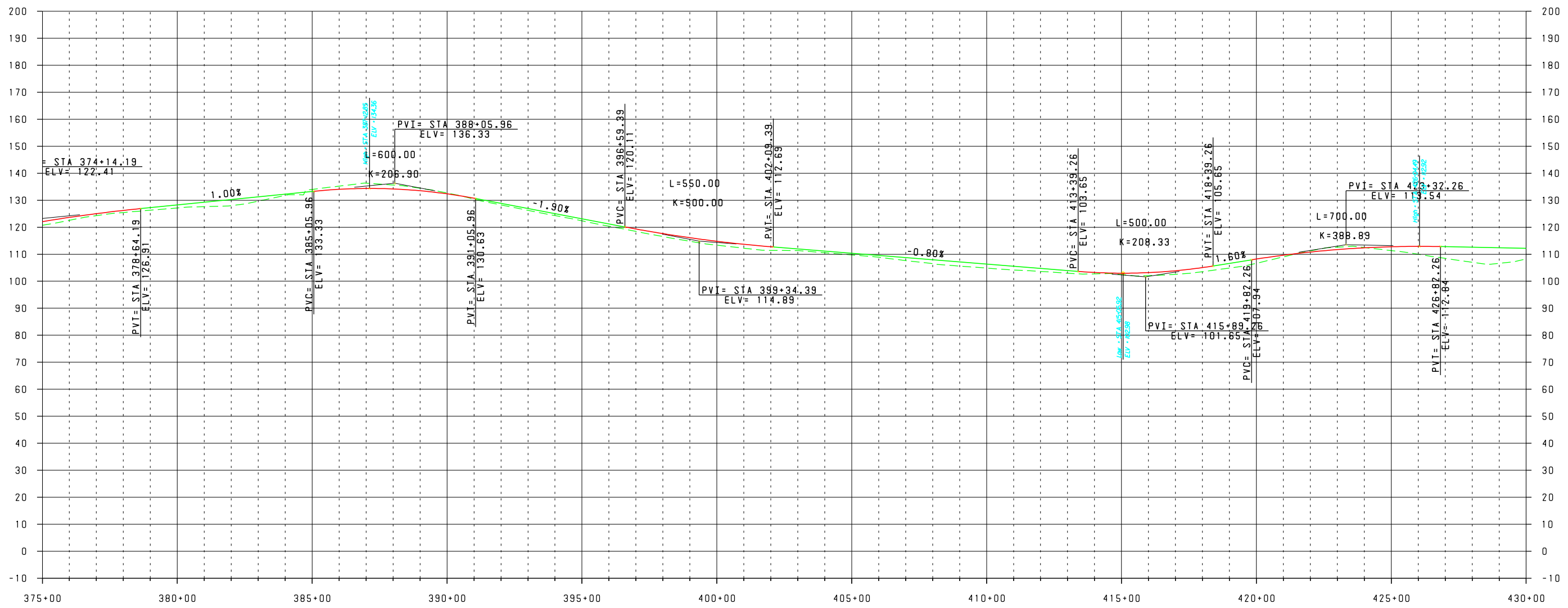
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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 87	SANTA ROSA	416748-3-22-01, ETC.		

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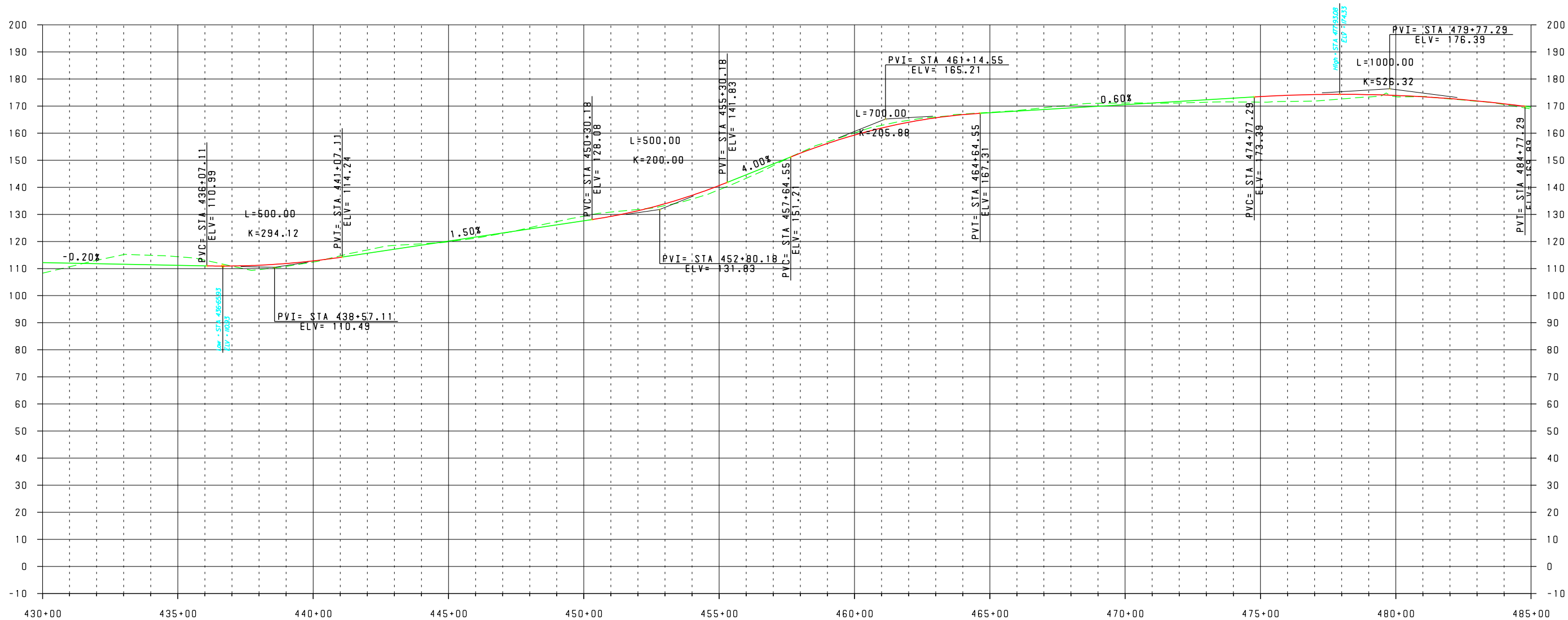
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--- EXISTING PROFILE  
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H: 1" = 400'

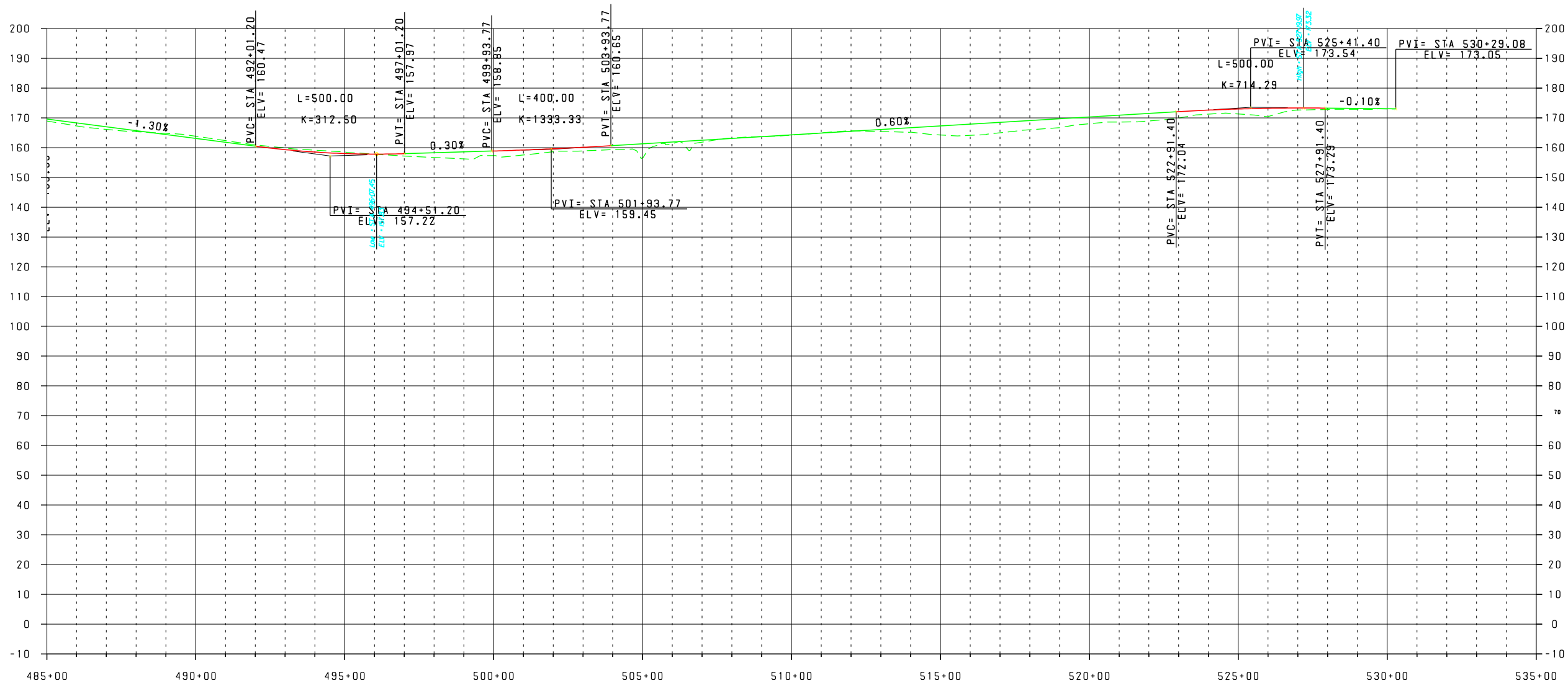
REVISIONS				<div><div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div></div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 2	SHEET NO. 51
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 87	SANTA ROSA	416748-3-22-01, ETC.		




--- EXISTING PROFILE  
--- WORKING MINIMUM PROFILE  
V: 1" = 40'  
H: 1" = 400'

REVISIONS				<div><div>METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294</div></div> <div>● ENGINEERS ● PLANNERS ● SURVEYORS</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROFILE SHEET ALIGNMENT 2	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 87	SANTA ROSA	416748-3-22-01, ETC.	52	






--- EXISTING PROFILE  
— WORKING MINIMUM PROFILE  
V: 1" = 40'  
H: 1" = 400'

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DATE	DESCRIPTION		DATE		DESCRIPTION		ROAD NO.		COUNTY	FINANCIAL PROJECT ID
							SR 87	SANTA ROSA	416748-3-22-01, ETC.	





PRELIMINARY  
NOT FOR CONSTRUCTION

Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	 <div>1589 Metropolitan Blvd. Tallahassee, FL 32308 850-894-1600 Fax: 850-894-1614</div>	Project: SR 87 CONNECTOR OVER BLACKWATER RIVER	Title: PARTIAL PLAN (1 OF 9) BRIDGE OVER BLACKWATER RIVER	Sheet No.
							Drawn By:	DAL	02/13					
							Designed By:							
							Approved By:			/				





PARTIAL PLAN  
(BRIDGE OVER BLACKWATER RIVER)

PRELIMINARY  
NOT FOR CONSTRUCTION

Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	Project	Title	Sheet No.
								Drawn By:			SR 87 CONNECTOR OVER BLACKWATER RIVER	PARTIAL PLAN (2 OF 9) BRIDGE OVER BLACKWATER RIVER	2
								Designed By:					
								Approved By:					



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Fax: 850-894-1614





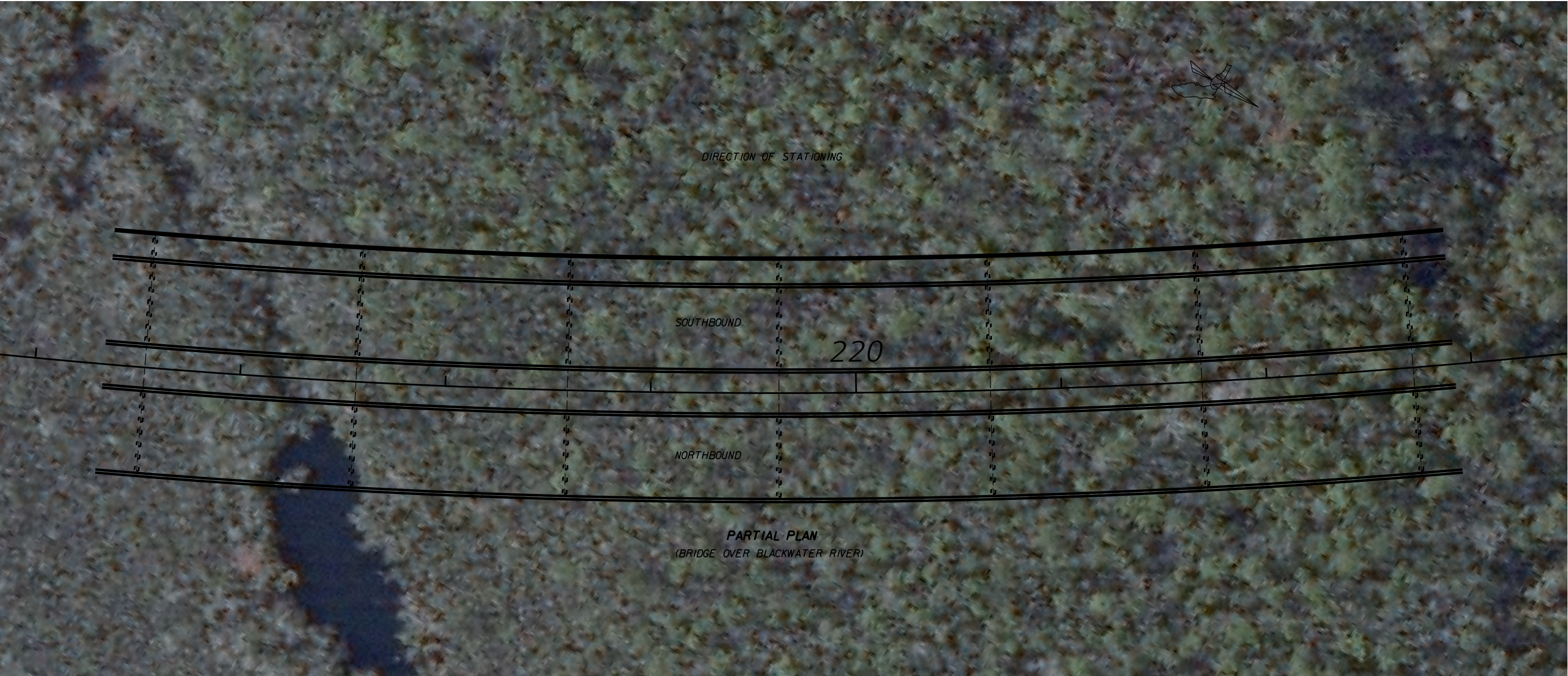
PRELIMINARY  
NOT FOR CONSTRUCTION

Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	Project	Title	Sheet No.
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								Designed By:					
								Approved By:					



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Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	Project	Title	Sheet No.
								Drawn By:	DAL	02/13	SR 87 CONNECTOR OVER BLACKWATER RIVER	PARTIAL PLAN (4 OF 9) BRIDGE OVER BLACKWATER RIVER	4
								Designed By:					
								Approved By:					



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Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	Project#	Title#	Sheet No.
								Drawn By:	DAL	02/13	SR 87 CONNECTOR OVER BLACKWATER RIVER	PARTIAL PLAN (5 OF 9) BRIDGE OVER BLACKWATER RIVER	5
								Designed By:					
								Approved By:					



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Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	Project	Title	Sheet No.
								Drawn By:	DAL	02/13	SR 87 CONNECTOR OVER BLACKWATER RIVER	PARTIAL PLAN (6 OF 9) BRIDGE OVER BLACKWATER RIVER	6
								Designed By:					
								Approved By:					



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Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	Project	Title	Sheet No.
								Drawn By:	DAL	02/13	SR 87 CONNECTOR OVER BLACKWATER RIVER	PARTIAL PLAN (7 OF 9) BRIDGE OVER BLACKWATER RIVER	7
								Designed By:					
								Approved By:					



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PRELIMINARY  
NOT FOR CONSTRUCTION

Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description		Name	Date	<div><div><div></div><div>FINLEY</div><div>Engineering Group, Inc.</div></div><div>1589 Metropolitan Blvd. Tallahassee, FL 32308 850-894-1600 Fax: 850-894-1614</div></div>	Project# SR 87 CONNECTOR OVER BLACKWATER RIVER	Title# PARTIAL PLAN (8 OF 9) BRIDGE OVER BLACKWATER RIVER	Sheet No.
								Drawn By:	DAL	02/13				8
								Designed By:						
								Approved By:						





PRELIMINARY  
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Revision	Drawn By	Date	Description	Revision	Drawn By	Date	Description	Drawn By	Name	Date	Project	Title	Sheet No.
								Drawn By	DAL	02/13	SR 87 CONNECTOR OVER BLACKWATER RIVER	PARTIAL PLAN (9 OF 9) BRIDGE OVER BLACKWATER RIVER	9
								Designed By					
								Approved By					





## Appendix E — Potential Stormwater Pond Sites




EXISTING BASIN 1: 198.65 AC  
EXISTING BASIN 2: 301.71 AC  
PROPOSED BASIN 1: 43.02 AC  
PROPOSED BASIN 2: 14.12 AC

**LEGEND**

- PROPOSED BASIN
- EXISTING BASIN
- WETLANDS
- FLOODWAY
- 100 YR FLOODZONE
- 1-1 POND ALTERNATIVES
- 100 CONTOURS

REVISIONS	
DATE	DESCRIPTION



**METRIC ENGINEERING, INC.**  
2616 JENKS AVENUE  
PANAMA CITY, FLORIDA 32405  
TEL (850) 872-8044  
FAX (850) 872-8704  
FLORIDA CERT. NO. EB-0002294

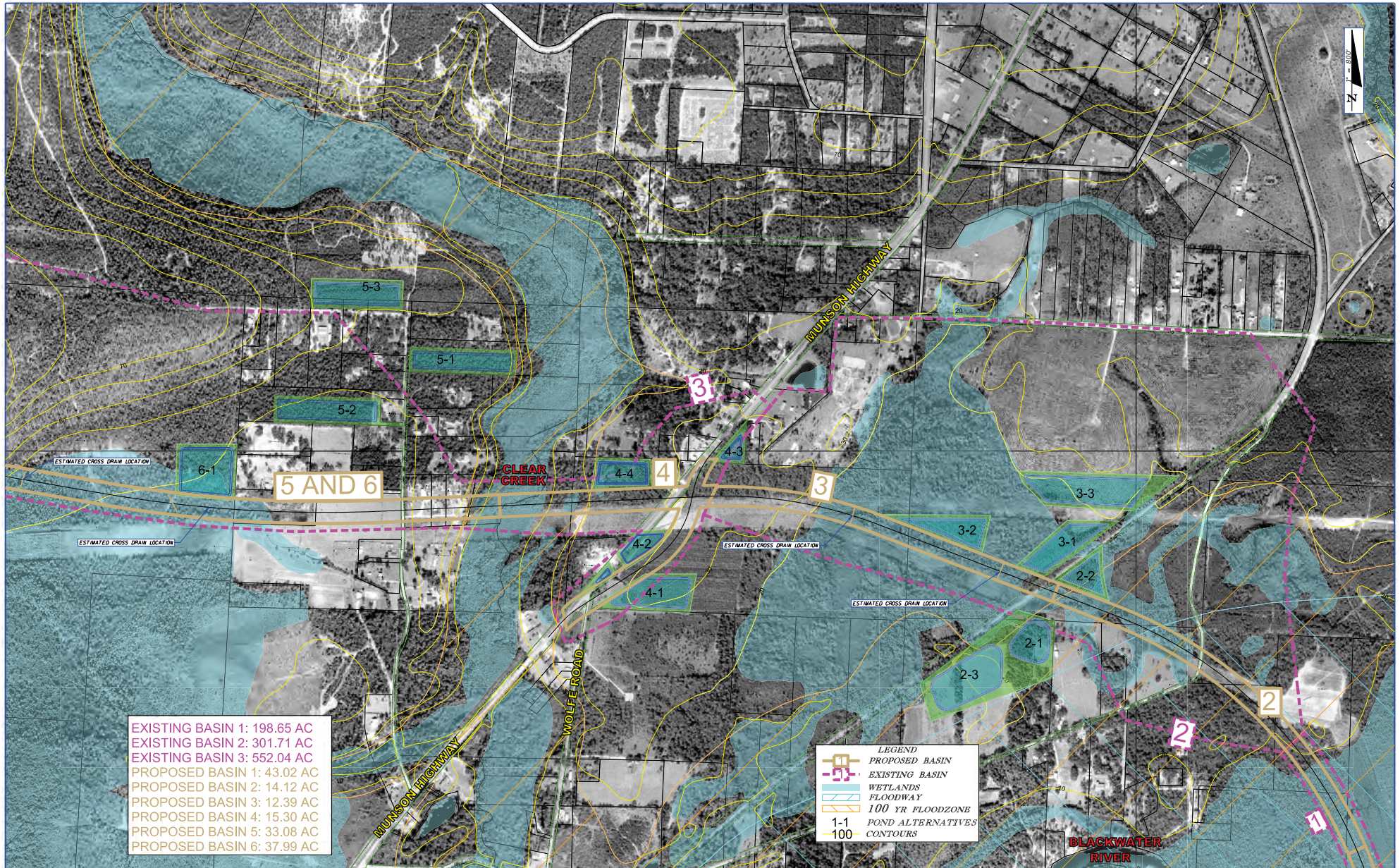
- ENGINEERS
- PLANNERS
- SURVEYORS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 87	SANTA ROSA	416748-3-22-01, ETC.

**DRAINAGE BASIN MAPS**

SHEET NO. 1





EXISTING BASIN 1: 198.65 AC  
EXISTING BASIN 2: 301.71 AC  
EXISTING BASIN 3: 552.04 AC  
PROPOSED BASIN 1: 43.02 AC  
PROPOSED BASIN 2: 14.12 AC  
PROPOSED BASIN 3: 12.39 AC  
PROPOSED BASIN 4: 15.30 AC  
PROPOSED BASIN 5: 33.08 AC  
PROPOSED BASIN 6: 37.99 AC

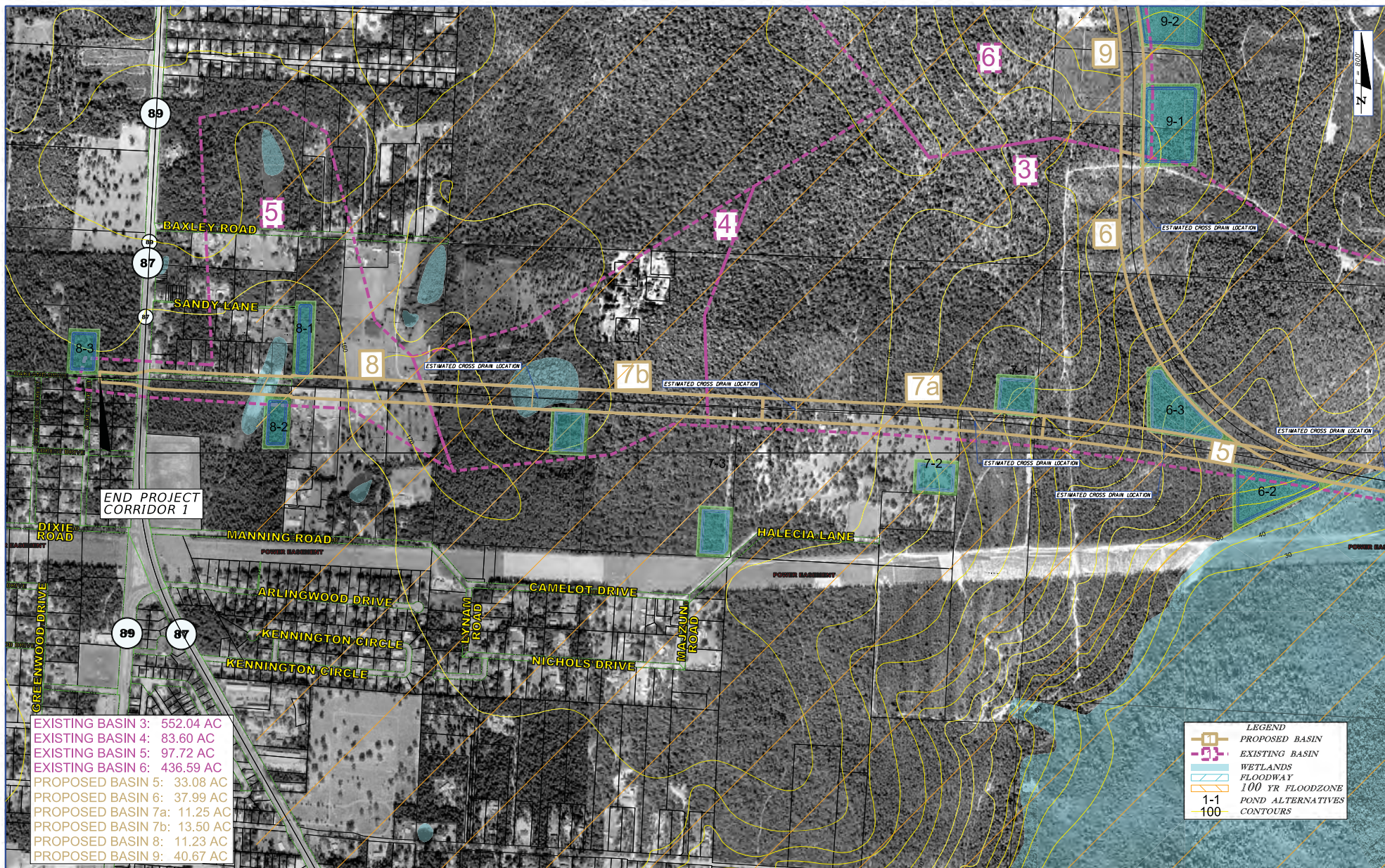
**LEGEND**

- PROPOSED BASIN
- EXISTING BASIN
- WETLANDS
- FLOODWAY
- 100 YR FLOODZONE
- POND ALTERNATIVES
- CONTOURS

1-1  
100

REVISIONS				 METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE BASIN MAPS	SHEET NO.  2
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 87	SANTA ROSA	416749-3-22-01, ETC.		





REVISIONS				 METRIC ENGINEERING, INC. 2616 JENKS AVENUE PANAMA CITY, FLORIDA 32405 TEL. (850) 872-8044 FAX. (850) 872-8704 FLORIDA CERT. NO. EB-0002294	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		<b>DRAINAGE BASIN MAP</b>	SHEET NO.  3
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
				• ENGINEERS • PLANNERS • SURVEYORS	SR 87	SANTA ROSA	416749-3-22-01, ETC.	

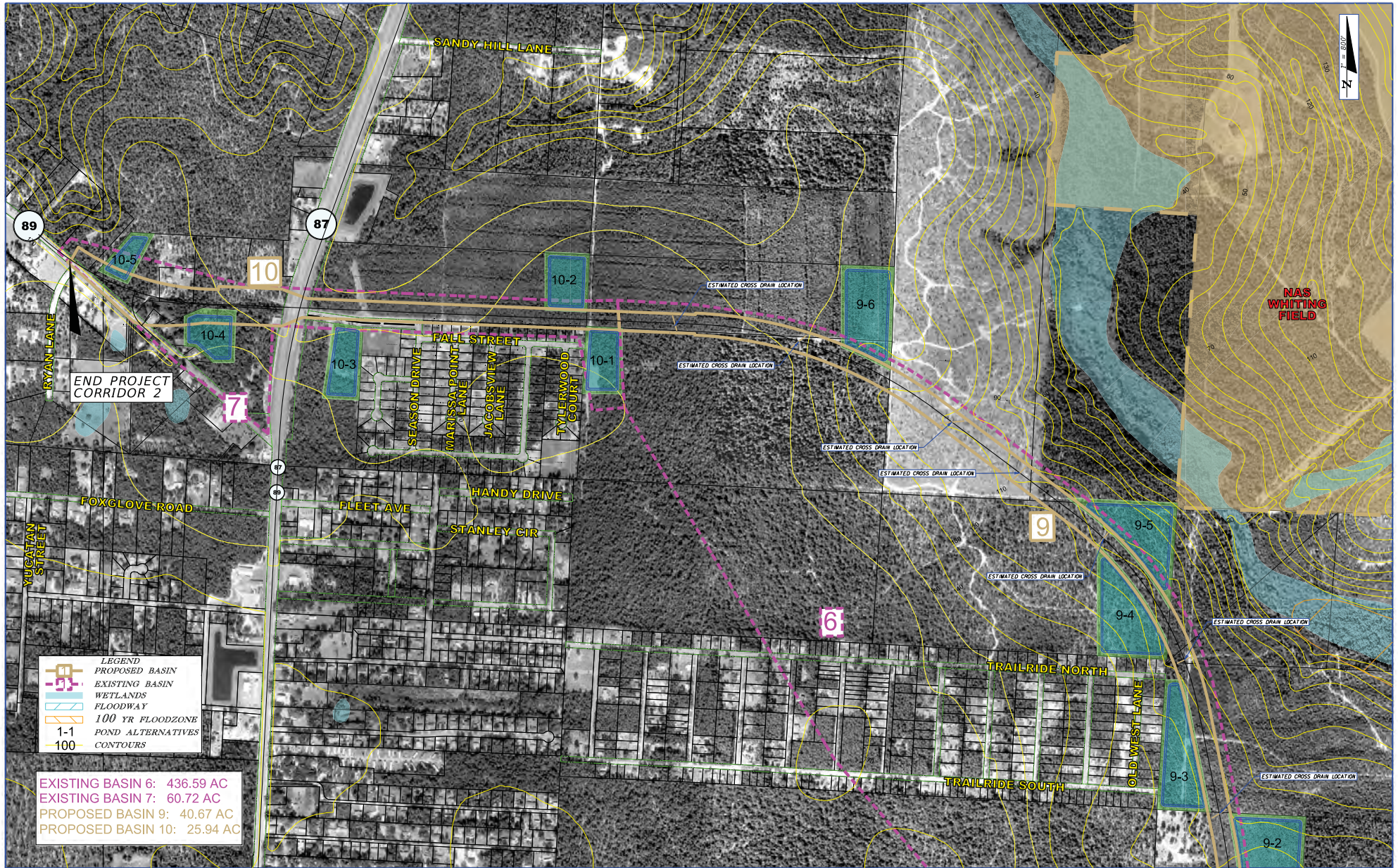
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EXISTING BASIN 6: 436.59 AC  
EXISTING BASIN 7: 60.72 AC  
PROPOSED BASIN 9: 40.67 AC  
PROPOSED BASIN 10: 25.94 AC

REVISIONS	
DATE	DESCRIPTION



METRIC ENGINEERING, INC.  
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PANAMA CITY, FLORIDA 32405  
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 87	SANTA ROSA	416749-3-22-01, ETC.

### DRAINAGE BASIN MAP

SHEET NO.
4